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Volume 28 Number 4

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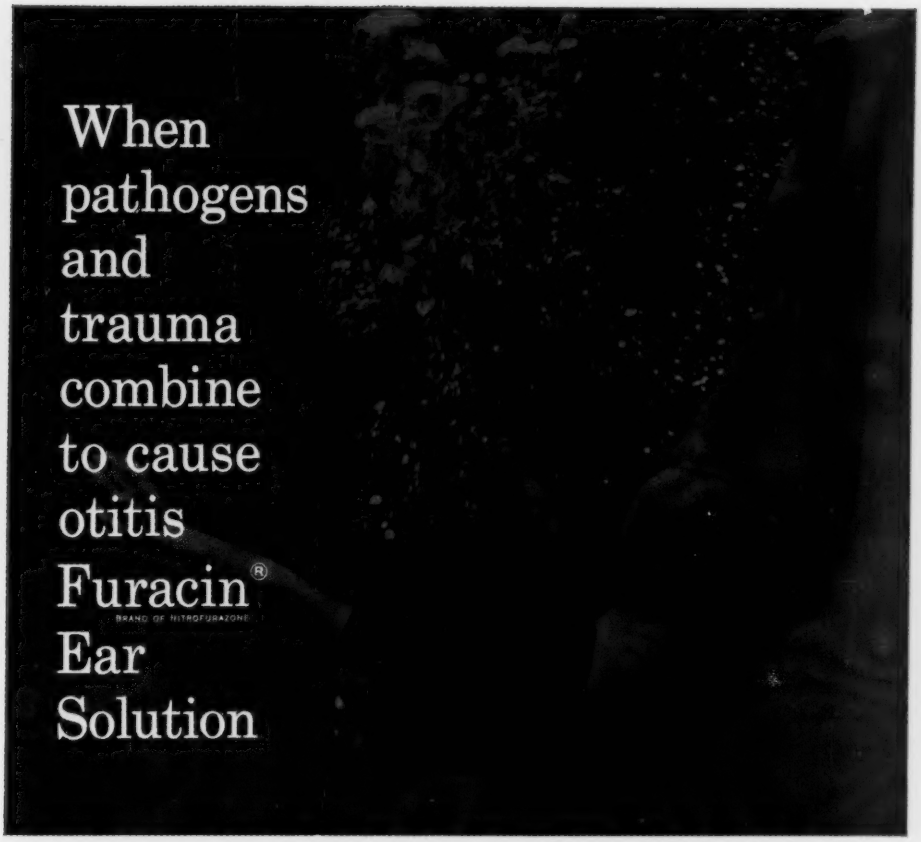

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REFERENCES: 1. Anderson, J. R., and Steele, C. H.: Laryngoscope 58:1279, 1948. 2. Long, P. H.: A-B-C's of Sulfonamide and Antibiotic Therapy, Philadelphia, W. B. Saunders Co., 1948, p. 152. 3. Peele, J. C.: Laryngoscope 63:488, 1953.

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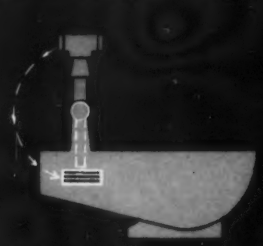

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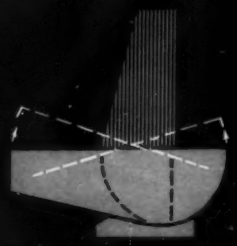

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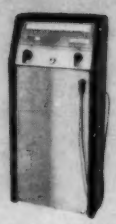

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INDUSTRIAL MEDICINE AND SURGERY

ESTABLISHED 1932

The International Journal of Medicine in Industry

APRIL, 1959
VOLUME XXVIII
NUMBER 4

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PERSONAL NEWS AND NOTES

ROBERT J. BUSSAN, M.D., has been named Medical Examiner of The Timken Roller Bearing Company for its Canton operations it was announced by WILLIAM WASSON, M.D., Medical Director. He will assist in Preventive Medicine of the Timken Company's new Medical Dispensary.

DR. BUSSAN graduated from Columbia University, and received his M.D. from the New York Medical College. He interned at Fordham Hospital in New York City. He completed three years of residency training in internal medicine and cardiology. He spent 18 months as a National Heart Institute trainee at New York Medical College in its Metropolitan Hospital Division.

He was in the U.S. Air Force for two years.

A native of Brooklyn, New York, he came to Canton in 1956. He has a private practice as a specialist in internal medicine.

DR. BUSSAN is a member of the Stark County Medical Society, the American Medical Association, a diplomate of the American Board of Internal Medicine and the National Board of Medical Examiners, and a member of the Phi Chi Medical Fraternity.

ARTHUR J. VORWALD, M.D., of Wayne State University College of Medicine, will be one of 15 representatives from seven countries to meet in South Africa February 9 to 21, 1959, to discuss their problems with pneumoconiosis, a chronic inflammation of the lungs caused by the inhalation of dust — mostly mineral.

Other delegates from the United States are THEODORE F. HATCH, Professor of Industrial Health Engineering, University of Pittsburgh, and O. A. SANDER, M.D., of Milwaukee.

The three Americans will meet in Johannesburg with scientists from the United Kingdom, Belgium, Germany, France, Switzerland and Northern Rhodesia at the invitation of the Pneumoconiosis Research Unit of the South African Council for Scientific and Industrial Research.

In addition to giving a series of papers, the delegates will visit several uranium mines and their medical clinics in an attempt to solve the African pneumoconiosis problem from both a research and clinical standpoint.

DR. VORWALD'S itinerary includes a visit to DR. ALBERT SCHWEITZER'S clinic in North Africa and other medical installations in New Delhi and Bombay, India, and Tokyo, Japan. He will give a lecture at the University of California on "Occupational Pulmonary Diseases" on his return in March.

—*Detroit Medical News*, February 2, 1959.

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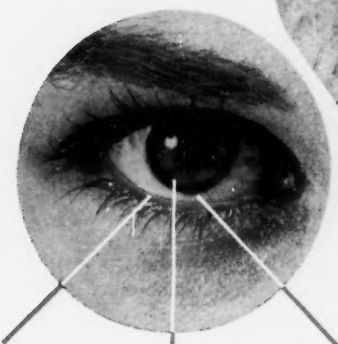

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Permanent Committee and International Association on Occupational Health, 13th International Congress on Occupational Health, July 25 to 29, 1960, Hotel Waldorf-Astoria, New York City, U.S.A. — Physicians, nurses, industrial hygienists and representatives from more than 40 countries will attend the 13th International Congress on Occupational Health. Prevention is the major theme of this Congress.

New and old problems will be discussed. Valuable knowledge will be shared in the following aspects of occupational health; administrative methods, medical and surgical practices, education and training, social and legal aspects, work physiology and psychology, environmental factors in health, environmental hygiene and hazards of specific industries.

Plan now to attend. Occupational health knows no geographic boundaries. For information write to ROBERT E. ECKARDT, M.D., Secretary-General, P. O. Box 51, Linden, New Jersey, U.S.A.

Individuals who wish to present papers at this Congress on any of the subjects listed above should obtain detailed information by writing promptly to IRVING R. TABERSHAW, M.D., Chairman of the Scientific Program Committee, International Congress on Occupational Health, 375 Park Avenue, New York City, U.S.A.

Standiger Ausschuss und Internationale Vereinigung für Berufliche Gesundheit, 13. Internationaler Kongress für berufliche Gesundheit, 25.-29. juli, 1960, Hotel Waldorf-Astoria, New York City, U.S.A.

Ärzte, Krankenschwestern, Berater für industrielle Gesundheit und Vertreter von über 40 Ländern werden dem 13. Internationalen Kongress für berufliche Gesundheit beiwohnen. Das Hauptthema dieses Kongresses ist Verhütung.

Planen Sie Ihre Anwesenheit bereits jetzt. Berufliche Gesundheit kennt keine geographischen Grenzen. Zwecks Auskunft wollen Sie bitte an DR. ROBERT E. ECKARDT, Secretary-General, P. O. Box 51, Linden, New Jersey, U.S.A., schreiben.

Teilnehmer, die Abhandlungen über einen der oben erwahnten Gegenstande auf dem Kongress vorzutragen wünschen, wollen sich bitte zwecks eingehender Auskunft baldigst schriftlich an DR. IRVING R. TABERSHAW, Chairman of the Scientific Program Committee, International Congress on Occupational Health, 375 Park Avenue, New York City, U.S.A., wenden.

Comite Permanente y Asociacion Internacional sobre Salud del Trabajo, XIII Congreso Internacional Sobre Salud Del Trabajo, Julio 25 al 29, 1960, Hotel Waldorf-Astoria, New York City, E.U.A. — Médicos, enfermeras, higienistas industriales y representantes de más de 40 países, atenderán el XIII Congreso Internacional sobre Salud del Trabajo. Prevención es el principal tema.

Serán puestos en discusión nuevos y viejos problemas. Valiosos conocimientos serán compartidos en los siguientes aspectos de salud del trabajo: métodos administrativos, prácticas médicas y quirúrgicas, educación y entrenamiento, aspectos sociales y legales, labor psicológica y fisiológica, el medio ambiente como factor de salud, medio ambiente en la higiene y peligros en las industrias específicas.

Desde ahora piense en concurrir. La salud del trabajo no conoce fronteras. Para información escriba al DR. ROBERT E. ECKARDT, Secretary-General, P. O. Box 51, Linden, New Jersey, U.S.A.

Las personas que deseen presentar documentos ante este Congreso, sobre algunas de las materias arriba anotadas, pueden obtener información detallada escribiendo immediatamente al DR. IRVING R. TABERSHAW, Chairman of the Scientific Program Committee, International Congress on Occupational Health, 375 Park Avenue, New York City, U.S.A.

Commission Permanente et Association Internationale de Medecine du Travail, 13ème Congrès International de Médecine du Travail, 25-29 Juillet, 1960, Hotel Waldorf-Astoria, New York City, U.S.A. — Les médecins, infirmières, hygiénistes industriels et représentants de plus de 40 pays participeront au 13ème Congrès International de Médecine du Travail. La prévention est le thème principal.

Des information de premier ordre seront échangées dans les aspects suivants de la médecine du travail: méthodes administratives, techniques médicales et chirurgicales, éducation et formation, aspects sociaux et légaux, physiologie et psychologie du travail, influence sanitaire du milieu.

Pour tous renseignements, veuillez vous adresser au DR. ROBERT E. ECKARDT, Secretary-General, P. O. Box 51, Linden, New Jersey, U.S.A.

Les personnes désirant présenter une communication sur l'un ou l'autre des sujets sus-mentionnés voudront bien sans tarder se mettre en contact avec le DR. IRVING R. TABERSHAW, Chairman of the Scientific Program Committee, International Congress on Occupational Health, 375 Park Avenue, New York.

And Don't Forget!

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71st Annual Meeting, April 16 – April 18, 1959
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FRED A. BRYAN, M.D., was recently appointed, by the Regents of the University of California, to the faculty of the University of California at Los Angeles. DR. BRYAN'S combined titles are Professor of Medicine (Industrial Medicine); Consultant in Occupational Medicine to University Physician; Lecturer in Public Health, Los Angeles; Professor of Preventive Medicine and Public Health; and Professor of Public Health.

EDWARD A. BOETTNER was appointed Assistant Professor of Industrial Health in the School of Public Health's Department of Industrial Health, effective April 1, 1959.

BOETTNER was born Aug. 28, 1915 in Wyandotte, Mich., and received a Bachelor of Chemical Engineering degree from Lawrence Institute of Technology (Detroit) in 1937. From 1936 to 1946, he was with the research department of Wyandotte Chemical Co. Since 1946, he has been associated with the U-M Engineering Research Institute (now the U-M Research Institute) where he is a research physicist.

MILES O. COLWELL, M.D., was recently appointed New Kensington (Pennsylvania) area Medical Director for Aluminum Company of America. He succeeds JAMES B. MCCONNAUGHY, M.D., who died January 7, 1959. DR. COLWELL has specialized in internal medicine, particularly in the fields of allergy and heart disease.

In his new, full-time post as a director of Alcoa's area medical program, he will be responsible for first-aid, physical examinations, personnel consultations and the medical facilities for more than 4,000 employees.

With the development and growth of Alcoa's planned new technical center at nearby Merwin, DR. COLWELL also will function as Medical Director for that facility.

W. N. SISK, M.D., recently resigned as Director of Industrial Health of the Upjohn Company, Kalamazoo, Michigan. He has accepted a position with the Phillips Petroleum Company and will be located in Texas.

LEONARD J. GOLDWATER, M.D., Professor of Occupational Medicine at Columbia University's School of Public Health and Administrative Medicine, was installed February 12, 1959, as President of the American Academy of Occupational Medicine.

The installation took place at the organization's annual meeting in Boston at the Sheraton-Plaza Hotel. DR. GOLDWATER succeeds RONALD F. BUCHAN, M.D., of the Prudential Life Insurance Company.

DR. GOLDWATER is a member of the World Health Organization expert advisory panel on social and occupational health and is a consultant to the office of vocational rehabilitation, Department of Health, Education and Welfare. He served in the U.S. Navy Medical Corps during World War II and is commander in the U.S. Naval Reserve (ret.).

At the election of officers for the American Academy of Occupational Medicine, the following members were elected to office:

President.....LEONARD J. GOLDWATER, M.D.
Vice-President.....J. QUIGLEY, M.D.
Treasurer.....JAMES H. MCDONOUGH, M.D.
Secretary.....LLOYD B. SHONE, CAPT., MC, USN

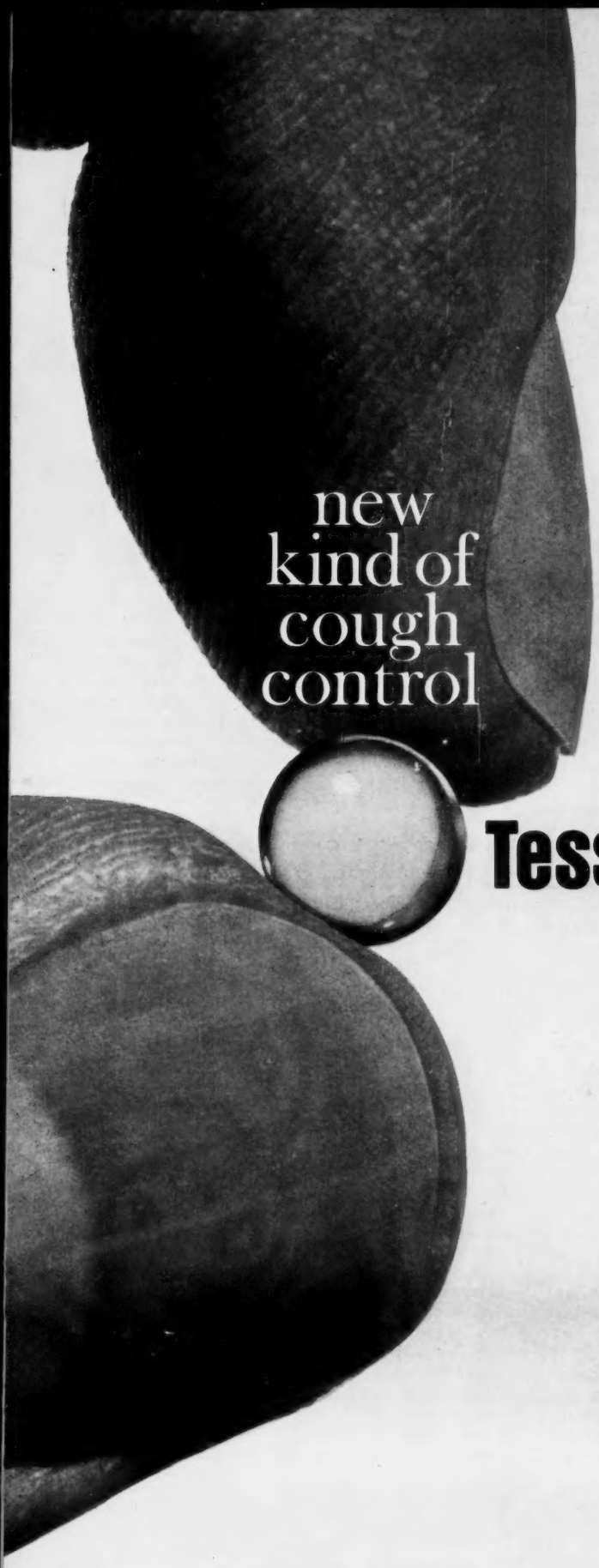
LOMAX WELLS, M.D., was elected to the Board of Directors of the Academy replacing J. MCCAHEN, M.D., whose term of office had expired.

Council on Industrial Health, American Medical Association, held its 19th Annual Congress on Industrial Health at Netherland Hilton Hotel, Cincinnati, Ohio, February 16-18, 1959. Education, research and the practice of occupational health were the three major areas of discussion at the Congress.

Highlight of the Congress was the annual banquet. At that time the Award of the President's Committee on the Employment of the Physically Handicapped was presented to HOWARD A. RUSK, M.D., Chairman, Department of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center. The Award is presented annually to a physician for his contributions in the field of employing the handicapped. It is presented by MAJOR GENERAL MELVIN J. MAAS, Chairman of the President's Committee. DR. RUSK, a pioneer in the field of rehabilitating the physically handicapped, founded the Department of Physical Medicine and Rehabilitation at New York University in 1946. This was the first such department in any medical school. Today, 68 medical colleges have similar departments or courses of instruction as part of their curriculum.

During World War II, DR. RUSK served as colonel in the medical corps of the Army Air Force. He originated and directed the Air Force's convalescent rehabilitation training program for which he was awarded the Distinguished Service Medal. After a postwar assignment at New York University, DR. RUSK began the development of the Institute of Physical Medicine at the University's Bellevue Medical Center. Begun in 1948 in a converted police court building, the Institute has grown and now occupies an imposing $2,500,000 structure. During the past 10 years the institute has treated more than 10,000 persons, provided one to three year training programs for 260 physicians and furnished shorter indoctrination courses to more than 3,000 doctors, nurses, therapists and other rehabilitation personnel. The Center has 100 beds for adults and 36 for children and has a daily outpatient roster of nearly 100. In addition, DR. RUSK'S team of doctors and therapists supervise 379 beds in nearby hospitals. Rehabilitative techniques developed and used at the Institute are now used in 38 foreign countries.

In conjunction with the Congress on Occupational Health, three television reports were presented to the general public. The series, "Your Health and Your Job," were presented in the interest of community health by the Upjohn Company in cooperation with the American Medical Association.



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American Academy of Occupational Medicine, 11th Annual Meeting, was held in the Sheraton-Plaza Hotel, Boston, Massachusetts, February 11-13, 1959.

The following is a resumé of the professional program presented during the Academy's 11th Annual Meeting, RONALD F. BUCHAN, M.D., presiding: "Pharmacological and Biochemical Approaches to Mental Disorders; Physiological Basis for Consciousness" ELWOOD HENNEMAN, M.D., Assistant Professor of Physiology, Harvard Medical School; "Biochemical Aspects of Schizophrenia" MARK ALTSCHULE, M.D., Assistant Professor of Medicine, Harvard Medical School; "Health Information For Employees" RICHARD J. SEXTON, M.D., Charleston, West Virginia; "Massachusetts Institute of Technology — Field Trip" HARRIET L. HARDY, M.D., Assistant Medical Director in Charge of Occupational Medical Services.

GEORGE F. WILKINS, M.D., Boston, Massachusetts, presided over the following presentations: "Transplantation of Normal Human Tissue — Present Status and Future" Moderator — JOHN P. MERRILL, M.D., Assistant Professor of Medicine, Harvard Medical School, Senior Associate in Medicine, Peter Bent Brigham Hospital; Participants — JOSEPH E. MURRAY, M.D., Director of Surgical Research Laboratory, Harvard Medical School; GUSTAV DAMMIN, M.D., Professor of Pathology, Harvard School of Medicine; JOHN R. BROOKS, M.D., Clinical Associate in Surgery, Harvard Medical School; SOMERS H. STURGIS, M.D., Clinical Professor of Gynecology, Harvard Medical School; "Immunologic Basis for Rejection of the Homograft" DOCTORS MERRILL AND DAMMIN; "Clinical Experience with Homographs and Isographs" DOCTORS MURRAY, STURGIS AND DAMMIN; "Approaches to the Homograft Problem" DOCTORS MERRILL, MURRAY AND BROOKS, the latter concluded material presented on transplantation of human tissues; "Recent Advances in the Therapy of Infectious Diseases" LOUIS WEINSTEIN, M.D., Professor of Medicine, Tufts University.

LEONARD J. GOLDWATER, M.D., Professor of Occupational Medicine, Columbia University, presided over the following subjects: "Fatalities from the Use of EDTA in Lead Intoxication" HEINRICH BRUGSH, M.D., Division of Occupational Hygiene, Commonwealth of Massachusetts; "Recent Investigations on Atmospheric Pollution" MARY O. AMDUR, PH.D., Assistant Professor of Physiology, Harvard School of Public Health; "Physiological Aspects of Human Fatigue" WILLIAM S. FREDERIK, M.D., Lecturer on Physiology, Harvard School of Public Health.

HARRIET L. HARDY, M.D., presided over the following: "Ocular Effects of Radiation" DAVID G. COGAN, M.D., Professor of Ophthalmology, Harvard School of Medicine; "Symposium on the Nuclear Reactor and It's Products," "Fundamentals of a Nuclear Reactor" THEO. J. THOMPSON, M.D., Professor, Department of Nuclear Engineering, Massachusetts Institute of Technology; "Health Hazards Associated with a Nuclear Reactor" CONSTANTINE MALETSKOS, PH.D., Radiation Biologist, Massachusetts Institute of Technology; "Chemical Applications of Reactor Products" MARTIN LUBIN, M.D., PH.D., Professor of Pharmacology, Harvard Medical School.

The Academy's annual banquet was held in the Oval Room of the Sheraton-Plaza Hotel, 7:00 P.M. on 12 February. It is the custom during the banquet to present an Academy award, in the form of a plaque to a physician whose work in the field of occupational medicine has been outstanding. This year the award was given to JAMES H. STERNER, M.D. Also during the banquet, some person who has distinguished himself in the field of occupational health is called upon to deliver the George Gehrmann Lecture. This year's Lecture was given by PROFESSOR PHILIP DRINKER of the Harvard School of Public Health.

International College of Surgeons, United States Section, has formed the Section on Surgery of Trauma as a successor to the Section on Occupational Surgery.

CHESTER C. GUY, M.D., Clinical Associate Professor of Surgery at the University of Illinois College of Medicine, Chicago, is chairman of the section and N. GILLMOR LONG, M.D., Evanston and Chicago, is co-chairman and secretary.

The Section on Surgery of Trauma will provide a forum for those surgeons whose work is limited to traumatic lesions and for those who treat frequently in their daily practice. The section will deal with developments in the treatment of specific injuries, consider programs for the prevention of injuries, conduct studies on basic physiologic and pathologic changes in the injured person, and give thought to allied subjects.

Fifth Industrial Hygiene Conference on "Health Engineering in the Space Age" will be held at The University of Texas, Austin, Texas, May 8, 1959. The Conference is sponsored by Occupational Health Division, Texas State Department of Health; College of Engineering, the University of Texas; North Texas Section, American Industrial Hygiene Association; and Gulf Coast Section, American Industrial Hygiene Association.

Department of Industrial Medicine and Hygiene, Wayne State University, Detroit, Michigan, announces a course of study leading to the Master of Science degree in Industrial Hygiene beginning March 16, 1959. Classes will be held at the College of Medicine, 1401 Rivard Street, Detroit 7, Michigan. Current classes are Principles of Industrial Hygiene; Industrial Hygiene Control-Ventilation; Industrial Hygiene Seminar. The Department operates on a quarterly basis, so that classes are held for a twelve-week period rather than the eighteen-week period of a semester. For this reason, more class hours per week are necessary per credit hour. Qualified persons may enroll in any of these courses for credit towards a Master's degree, or as a special student. A total of 32 credit hours are required for the Master's degree. Those interested should contact: Ralph G. Smith, Associate Professor, Department of Industrial Medicine and Hygiene, College of Medicine, Wayne State University, 1401 Rivard Street, Detroit 7, Michigan.

Now- All cold symptoms can be controlled

Provides Triaminic for more complete and more effective relief from nasal and paranasal congestion because of systemic transport to *all* respiratory membranes—without drawbacks of topical therapy.†

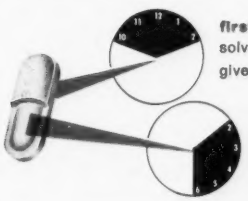
Provides well-tolerated APAP (N-acetyl-p-aminophenol) for prompt and effective analgesic and antipyretic action to make the patient more comfortable.

Provides Dormethan (brand of dextromethorphan HBr) for non-narcotic antitussive action on the cough reflex center in the medulla—as effective as codeine but without codeine's drawbacks.

Provides terpin hydrate, classic expectorant to thin inspissated mucus and help the patient clear the respiratory passages.

†Lhotka, F. M.: Illinois M. J. 112:259 (Dec.) 1957. Fabricant, N. D.: E. E. N. T. Monthly 37:460 (July) 1958. Farmer, D. F.: Clin. Med. 5:1183 (Sept.) 1958.

Special "timed release" design



first—the outer layer dissolves within minutes to give 3 to 4 hours of relief

then—the inner core releases its ingredients to sustain relief for 3 to 4 more hours

also available for those patients who prefer liquid medication: **Tussagesic suspension**

Each TUSSAGESIC tablet provides:

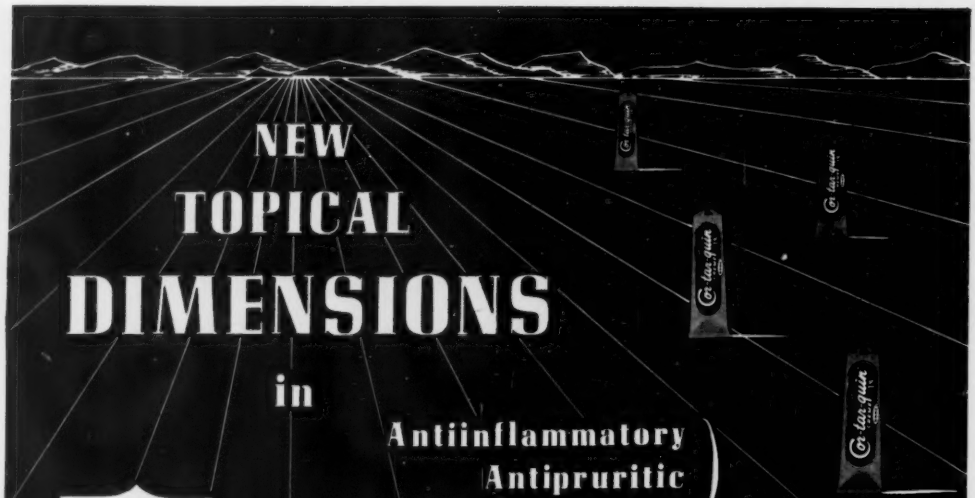
TRIAMINIC®	50 mg.
(phenylpropanolamine HCl	25 mg.
pheniramine maleate	12.5 mg.
pyrilamine maleate	12.5 mg.)
Dormethan (brand of dextromethorphan HBr)	30 mg.
Terpin hydrate	180 mg.
APAP (N-acetyl-p-aminophenol)	325 mg.

Dosage: One tablet in the morning, midafternoon and in the evening, if needed.

Tussagesic® *timed-release tablets*

Contains TRIAMINIC to STOP running noses and open stuffed noses orally

SMITH-DORSEY • a division of The Wander Company • Lincoln, Nebraska • Peterborough, Canada



NEW
TOPICAL
DIMENSIONS
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Antiinflammatory
Antipruritic
Antiallergic
Bactericidal
Fungicidal
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INCORPORATED IN EXCLUSIVE ACID MANTLE® VEHICLE

pH 5.0 Creme
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ACID MANTLE® · hydrocortisone · stainless tar · diiodohydroxyquinoline

In subacute and chronic dermatoses, "especially where an inflammatory reaction was accompanied by increased scaling and lichenification with secondary infection such as is seen in seborrheic dermatitis, atopic dermatitis, contact dermatitis, and neurodermatitis."

—Rein, C. R., and Fleischmajer, R.: Personal Communication.

Sig: Apply b. i. d.
½ oz., 1 oz., 2 oz., & 4 oz. tubes
either 0.5% or 1.0% hydrocortisone.

Samples and literature on request

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even if your patient is a boom rat*

*logger who rafts logs in a "boom"

he'll be pulling down his pay again soon thanks to

PARAFON

(PARAFLEX® + TYLENOL®)

for muscle relaxation *plus* analgesia

prescribe PARAFON in low back pain—sprains—strains—rheumatic pains

Each PARAFON tablet contains:
PARAFLEX Chlorzoxazone‡ ..... 125 mg.
A most effective oral muscle relaxant
TYLENOL Acetaminophen ..... 300 mg.
The preferred analgesic for painful musculoskeletal disorders

Dosage: Two tablets t.i.d. or q.i.d.

Supplied: Tablets, scored, pink, bottles of 50.

and in arthritis

PARAFON WITH PREDNISOLONE

Each PARAFON WITH PREDNISOLONE tablet contains: PARAFLEX® Chlorzoxazone‡ 125 mg., TYLENOL® Acetaminophen 300 mg., and prednisolone 1.0 mg.

Supplied: Tablets, scored, buff colored, bottles of 36.

Precautions: The precautions and contraindications that apply to all steroids should be kept in mind when prescribing PARAFON WITH PREDNISOLONE.

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248459

how you can help your organization reduce

the terrible cost[$] of dysmenorrhea

More than a third of all young women in America are afflicted with disabling dysmenorrhea. Each year, 140 million working hours are lost because of it.

You can cut lost time in your organization by making sure 'Edrisal' is in the dispensary. A combination of Benzedrine® Sulfate—which is both antidepressant and antispasmodic—and two highly effective analgesics, 'Edrisal' is virtually specific in dysmenorrhea.

It relieves the depression, the cramps, the pain.

Order 'Edrisal' today and save countless working hours now being lost to dysmenorrhea. 'Edrisal' is available through regular drug channels in bottles of 50 and 500 tablets.

Formula: Each 'Edrisal' tablet contains: 'Benzedrine' Sulfate (brand of amphetamine sulfate), 2.5 mg.; aspirin, 2.5 gr.; phenacetin, 2.5 gr.

EDRISAL®

ANALGESIC • ANTISPASMODIC • ANTIDEPRESSANT

two tablets every 3 hours

Smith Kline & French Laboratories, Philadelphia

running noses

and open stuffed noses orally

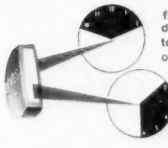
with TRIAMINIC, the oral nasal decongestant

- in nasal and paranasal congestion
- in sinusitis
- in postnasal drip
- in allergic reactions of the upper respiratory tract

safer and more effective than topical medication

- reaches *all* respiratory membranes systemically
- avoids "nose drop addiction"
- presents no problem of rebound congestion
- provides longer-lasting relief

Relief with Triaminic is prompt and prolonged because of this special timed-release action . . . beneficial effect starts in minutes, lasts for hours.


first—the outer layer dissolves within minutes to produce 3 to 4 hours of relief
then—the inner core disintegrates to give 3 to 4 more hours of relief

Each* TRIAMINIC *Tablet provides:

Phenylpropanolamine HCl . . .	50 mg.
Pheniramine maleate	25 mg.
Pyrilamine maleate	25 mg.

One-half of this formula is in the outer layer, the other half is in the core.

Dosage: One tablet in the morning, mid-afternoon and in the evening, if needed.

Triaminic®

Also available: For the occasional patient who requires only half dosage: timed-release TRIAMINIC JUVELETS. Each Juvelet is equivalent to ½ of a Triaminic Tablet.

For those patients who prefer liquid medication: TRIAMINIC SYRUP. Each 5 ml. tsp. of this palatable syrup is equivalent to ¼ of a Triaminic Tablet.

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before you order syringes & needles

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the new **VIM**®

standard and disposable line

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Producers of Davis & Geck Brand Sutures and
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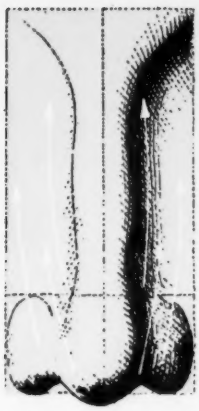
NOSE-OPENER

BIOMYDRIN®

nasal spray

drops



speeds medication to the site of irritation

penetrates, causing prompt dispersion of mucoid secretions. This deep infiltration allows all therapeutic agents to remain active for prolonged periods.

spreads almost instantly.

clears the air passages.

decongests without causing rebound congestion.

controls the allergic component.

combats infections.

safe—no pediatric dosage form is needed.

WARNER CHILCOTT

MORRIS PLAINS, N. J.

Thonzonium bromide 0.05%
Neomycin sulfate 0.1%
Gramicidin 0.005%
Thonzylamine HCl 1.0%
Phenylephrine HCl 0.25%
15 ml. atomizer or dropper bottle.

Also, **Biomydrin® F nasal spray** with hydrocortisone alcohol 0.02%—useful in the most stubborn cases of edema and inflammation. 15 ml. atomizer.

SURGICAL GUT | SILK | COTTON | NYLON | POLYETHYLENE | STAINLESS STEEL | ATRAUMATIC® NEEDLES—STANDARD OR PRE-CUT LENGTHS

STANDARDIZE

on safer, individually-packaged SURGILOPE SP* sterile suture strip pack

- complete line in double-envelope strip pack eliminates all storage jars and solutions . . . checks cross-contamination at the suture level!
- no broken glass to damage sutures, cut gloves and fingers, or invade operating field
- loose coil replaces reel . . . eliminates kinks, avoids excessive handling
- simple, speedy technic cuts preparation time . . . reduces waste by allowing extra sutures to be opened as needed
- boxes instead of jars means no breakage, convenient storage, easier handling

*Trademark Patent Pending

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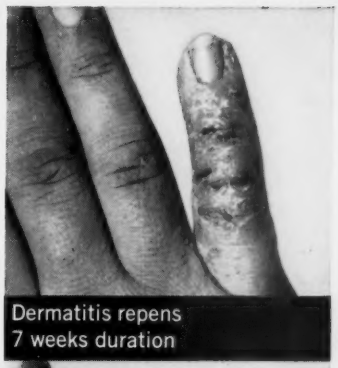
PRODUCERS OF DAVIS & GECK BRAND SUTURES AND VIM® BRAND HYPODERMIC SYRINGES AND NEEDLES

new for total management of itching,[1,2] inflamed,[3,4] infected[5,6] skin lesions



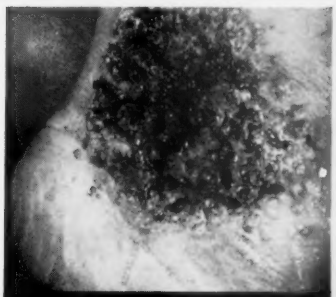
Dermatitis repens
7 weeks duration

Cleared in 5 days

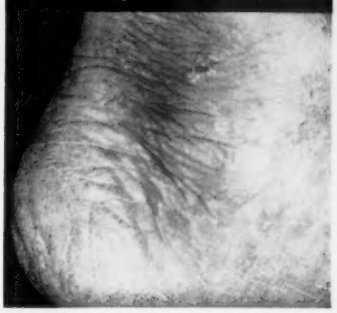
Mycolog ointment

Kenalog, Spectrocin and Mycostatin in Plastibase

antipruritic/anti-inflammatory/antibacterial/antifungal



Infectious eczematoid dermatitis of ankle—5 years duration



Cleared in 20 days

Mycolog Ointment – containing the new superior topical corticoid Kenalog – reduces inflammation,[3,4] relieves itching,[1,2] and combats or prevents bacterial, monilial and mixed infections.[5-7] It is extremely well tolerated, and assures a rapid, decisive clinical response for most infected dermatoses.

> "Thirty-one of 38 patients . . . obtained excellent or good control of dermatological lesions . . . [Mycolog] was highly effective, particularly in the management of mixed infections. Several recalcitrant eruptions which had not responded to previous therapy were remarkably responsive to the daily application of this preparation over periods of 2 to 3 weeks."[5]

For total management of itching, inflamed, infected skin lesions, Mycolog contains triamcinolone acetonide, an outstanding new topical corticoid for prompt, effective relief of itching, burning and inflammation[1-4] – neomycin and gramicidin for powerful antibacterial action[7] – and nystatin for treating or preventing Candida (Monilia) albicans infections.[8,9]

Application: Apply 2 to 3 times daily. Supply: 5 Gm. and 15 Gm. tubes. Each gram supplies 1.0 mg. (0.1%) triamcinolone acetonide, 2.5 mg. neomycin base, 0.25 mg. gramicidin, and 100,000 units nystatin in PLASTIBASE.

References: 1. Shelmire, J.B., Jr.: Monographs on Therapy 3:164 (Nov.) 1958. • 2. Nix, T.E., Jr., and Derbes, V.J.: Monographs on Therapy 3:123 (Nov.) 1958. • 3. Robinson, R.C.V.: Bull. School of Med., U. Maryland 43:54 (July) 1958. • 4. Sternberg, T.H.; Newcomer, V.D., and Reisner, R.M.: Monographs on Therapy 3:115 (Nov.) 1958. • 5. Clark, R.F., and Hallett, J.J.: Monographs on Therapy, 3:153 (Nov.) 1958. • 6. Smith J.G., Jr.; Zawisza, R.J., and Blank, H.: Monographs on Therapy, 3:111 (Nov.) 1958. • 7. Monographs on Therapy, 3:137 (Nov.) 1958. • 8. Howell, C.M., Jr.: North Carolina M.J. 19:449 (Oct.) 1958. • 9. Bereston, E.S.: South. M.J. 50:547 (April) 1957.

And whatever the topical corticoid need, a suitable Squibb formulation is available—Kenalog-S Lotion—7½ cc. plastic squeeze bottles. Each cc. supplies 1.0 mg. (0.1%) triamcinolone acetonide, 2.5 mg. neomycin base and 0.25 mg. gramicidin. Kenalog Cream, 0.1%—5 Gm. and 15 Gm. tubes. Kenalog Lotion, 0.1%—15 cc. plastic squeeze bottles. Kenalog Ointment, 0.1%—5 Gm. and 15 Gm. tubes.

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Squibb Quality — the Priceless Ingredient

'SPECTROCIN'®, 'MYCOSTATIN'®, 'PLASTIBASE'®, 'MYCOLOG' AND 'KENALOG' ARE SQUIBB TRADEMARKS

NOW—YOU CAN GET THE
UNSURPASSED ADVANTAGES
OF ARISTOCORT
IN SALICYLATE
COMBINATION

Arist

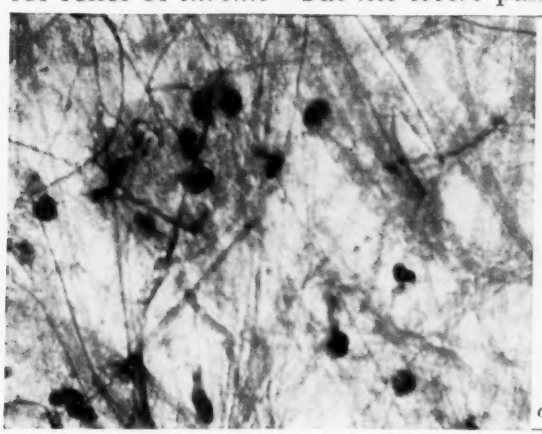
Aristogesic combines the *anti-inflammatory* effects of Aristocort® Triamcinolone with the *analgesic* action of a most potent salicylate. This means that the dosage of each is *substantially lower* than that ordinarily required for each agent alone. With Aristogesic the physician has exceptionally wide latitude in adjusting the dosage to the lowest effective level.

The possibility of gastric distress from either salicylamide or corticosteroid is minimized because of lower dosage required. This is further reduced by the buffer action of aluminum hydroxide. And the ascorbic acid helps meet the increased need for this vitamin in stress conditions. Because of the low dosage, side effects with Aristogesic have been relatively infrequent and minor in nature. However, more serious side effects have traditionally been observed on all corticosteroid therapy. Patients on long-term Aristogesic therapy should, therefore, be observed carefully.

ogesic*

Steroid–Analgesic Compound LEDERLE

for relief of *chronic*–but *less severe* pain of rheumatic origin



Indications: Mild cases of rheumatoid arthritis, tenosynovitis, synovitis, bursitis, mild spondylitis, myositis, fibrositis, neuritis and certain muscular strains.

Dosage: Average initial dosage: 2 capsules 3 or 4 times daily. Maintenance dosage to be adjusted according to response.

Each Aristogesic Capsule contains:

ARISTOCORT® Triamcinolone	0.5 mg.
Salicylamide	325 mg.
Aluminum Hydroxide	75 mg.
Ascorbic Acid	20 mg.

Supply: Bottles of 100.

Collagen tissue (x250)

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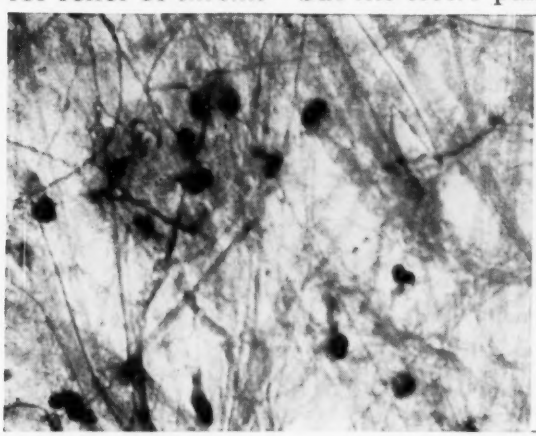
Steroid–Analgesic Compound LEDERLE

for relief of *chronic*—but *less severe* pain of rheumatic origin



Collagen tissue (x250)

Indications: Mild cases of rheumatoid arthritis, tenosynovitis, synovitis, bursitis, mild spondylitis, myositis, fibrositis, neuritis and certain muscular strains.

Dosage: Average initial dosage: 2 capsules 3 or 4 times daily. Maintenance dosage to be adjusted according to response.

Each Aristogesic Capsule contains:

ARISTOCORT® Triamcinolone . . . . 0.5 mg.
Salicylamide . . . . 325 mg.
Aluminum Hydroxide . . 75 mg.
Ascorbic Acid . . . . . 20 mg.

Supply: Bottles of 100.

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RUBBER ELASTIC BANDAGE

STANDS OUT BECAUSE IT STANDS UP

under constant use—With a **tensile strength greater than any competitive bandage,** amazing new ACE has increased resistance to tearing built into every strand. Even after repeated wear and laundering, ACE continues to provide firm, anatomically correct support.

under higher heat—Even **15 hours of dry heat sterilization at 320° F.** can't wilt this new ACE... the specially developed rubber threads retain elasticity to a degree never thought possible before.

for maximum economy—Specify ACE hospital packaging. Individually polyethylene wrapped bandages, 2", 2½", 3" or 4" widths, in boxes of twelve...6" width in boxes of six. Readily available from your nearby distributor—the single source for most of your hospital supplies.

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In Mild Depression

Deaner®

p-acetamidobenzoic acid salt of 2-dimethylaminoethanol

Anti-Depressant

Do Not confuse it with tranquilizers

'Deaner' must not be confused with tranquilizing or sedative drugs which may aggravate depression. On the contrary, 'Deaner' is often used to counteract drug-induced depression.

'Deaner' is valuable as an emotional normalizer in many situations other than depression, such as behavior problems with agitation. Nor should 'Deaner' be considered an ordinary stimulant. Its gentle action differs from that of other stimulants in that it leads to increased useful energy and alertness without the undesirable side effects of the amphetamine-like drugs.

Literature and bibliography available upon request.

Deaner a totally new molecule, offers a new type of alleviation in depression, fatigue states and many other emotional disturbances. Its physiologic effectiveness as a safe central nervous system stimulant is attributed to its activity as a probable precursor to acetylcholine.

Deaner leads to better ability to concentrate, increased daytime energy, sounder sleep (with less sleep needed), and a more affable mood.

Deaner acts gently, gradually, and its effects are prolonged... without causing hyperirritability... without loss of appetite... without elevating blood pressure or heart rate... without sudden letdown on discontinuance.

Deaner is valuable in the treatment of children, especially those whose performance is impaired by behavior problems, whose attention span is too short, and who are emotionally unstable, unpredictable, and unadaptable.

Dosage: Initially, 1 tablet (25 mg.) in the morning. Maintenance dose, 1 to 3 tablets; for children, ½ to 3 tablets. Three to four weeks of therapy may be required for maximum benefit.

Riker Northridge, California

***The most comfortable patients with hemorrhoids are those who use* Nupercainal®** *Ointment or Suppositories*

NUPERCAINAL relieves intense itching, burning and pain during non-surgical treatment of hemorrhoids. Used postoperatively, it promotes lasting comfort. Also useful for routine office instrumentation, cuts, minor bruises, sunburn and whenever a topical anesthetic is indicated. Does not contain narcotics to mask serious rectal disease.

NUPERCAINAL *Ointment*, 1% (petrolatum base); 1-ounce tubes with rectal applicator, and 1-pound jars for office use.

For convenience and accurate control of dosage: NUPERCAINAL® *Suppositories*, 2 Gm., each containing 2.5 mg. Nupercaine® (dibucaine CIBA) base; boxes of 12.

NUPERCAINAL® (dibucaine CIBA)

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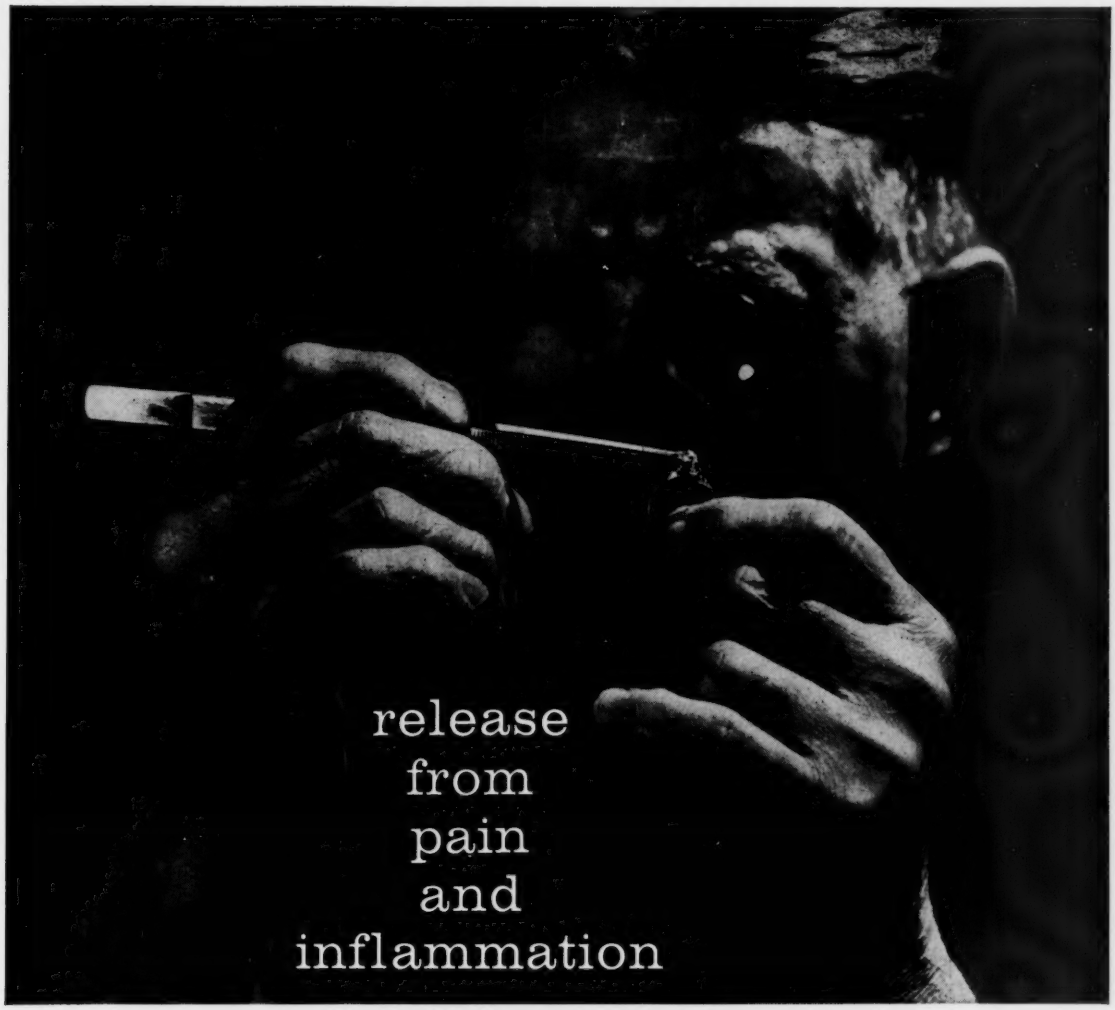

with **BUFFERIN® IN ARTHRITIS**

salicylate benefits with minimal salicylate drawbacks

Rapid and prolonged relief—with less intolerance.

The analgesic and specific anti-inflammatory action of BUFFERIN helps reduce pain and joint edema—comfortably. BUFFERIN caused no gastric distress in 70 per cent of hospitalized arthritics with proved intolerance to aspirin. (Arthritics are at least 3 to 10 times as intolerant to straight aspirin as the general population.[1])

No sodium accumulation. Because BUFFERIN is sodium free, massive dosage for prolonged periods will not cause sodium accumulation or edema, even in cardiovascular cases.

Each *sodium-free* BUFFERIN tablet contains acetylsalicylic acid, 5 grains, and the antacids magnesium carbonate and aluminum glycinate.

Reference: 1. J.A.M.A. 158:386 (June 4) 1955.

ANOTHER FINE PRODUCT OF BRISTOL-MYERS

Bristol-Myers Company, 19 West 50 Street, New York 20, N. Y.

New from Sonotone...Pure-Tone Audiometers with a full-year warranty!

Light weight, easy to carry. Tough plastic case won't crack, dent or chip under rigorous portable use.

- **Outstanding performance**
- **Low cost**
- **Simple, speedy operation**

Sonotone's new Model 91 series of audiometers meets or exceeds all recognized technical and medical standards of design and performance.

So confident is Sonotone of their quality that you get a warranty of *one full year*—not just the usual 90 days. Yet prices are *lower* than any corresponding types now on the market.

And they're simple to operate—the most-used controls are handiest. There are Model 91 types for every service—perfect for doctors' offices, health departments, schools, industry.

FREE BROCHURE! Write for illustrated brochure giving many more details on Sonotone's new pure-tone audiometers.

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Leading manufacturer and distributor of superior transistor hearing aids

New ORAL DECONGESTANT

DRISTAN®

TABLETS

afford a new degree of symptomatic relief from

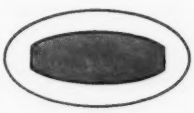
- **SINUSITIS**
- **THE COMMON COLD**
- **ALLERGIC DISORDERS**

Minimizes the Hazard of Drowsiness on the Job

as compared with other preparations containing antihistamines

Unique 3-layer decongestant tablet development offers a combination of ingredients never before possible to put into a single tablet.

DRISTAN—*Faster In Therapeutic Action*

Regular Enteric Coated Tablet	3-Layer Uncoated Dristan Tablet
	
Disintegrates in 3 hours	Disintegrates in 7 minutes

Dristan Decongestant Tablets—afford *a new degree of relief* from the symptoms of sinusitis, nasal allergies, postnasal drip and the common cold by releasing:

(1) A POWERFUL VASCOCONSTRICTOR . . . phenylephrine hydrochloride. This shrinks swollen sinus membranes and promotes proper drainage.

(2) A UNIQUE ANTIHISTAMINE . . . phenindamine tartrate. Rarely produces drowsiness. Controls the edema and discharge caused by offending allergens.

(3) VITAMIN C. Under body stress such as fever and infectious diseases — the normal requirements double. The daily dose of Vitamin C in Dristan is *more than twice* the recommended daily allowance.

(4) Approved APC formula . . . aspirin, phenacetin and caffeine.

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References: Annals of Allergy, Vol. 6. July-August 1948. Study of a New Histamine Antagonist, The Pennsylvania Med. J., Vol. 51. Clinical Study of a New Antihistaminic Drug—Phenindamine. Dristan Clinical Study.

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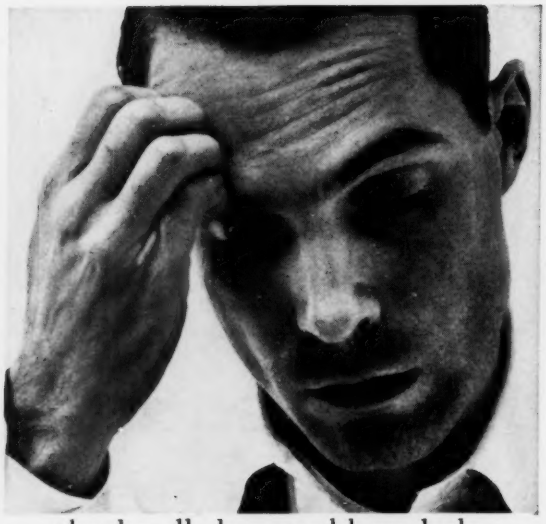

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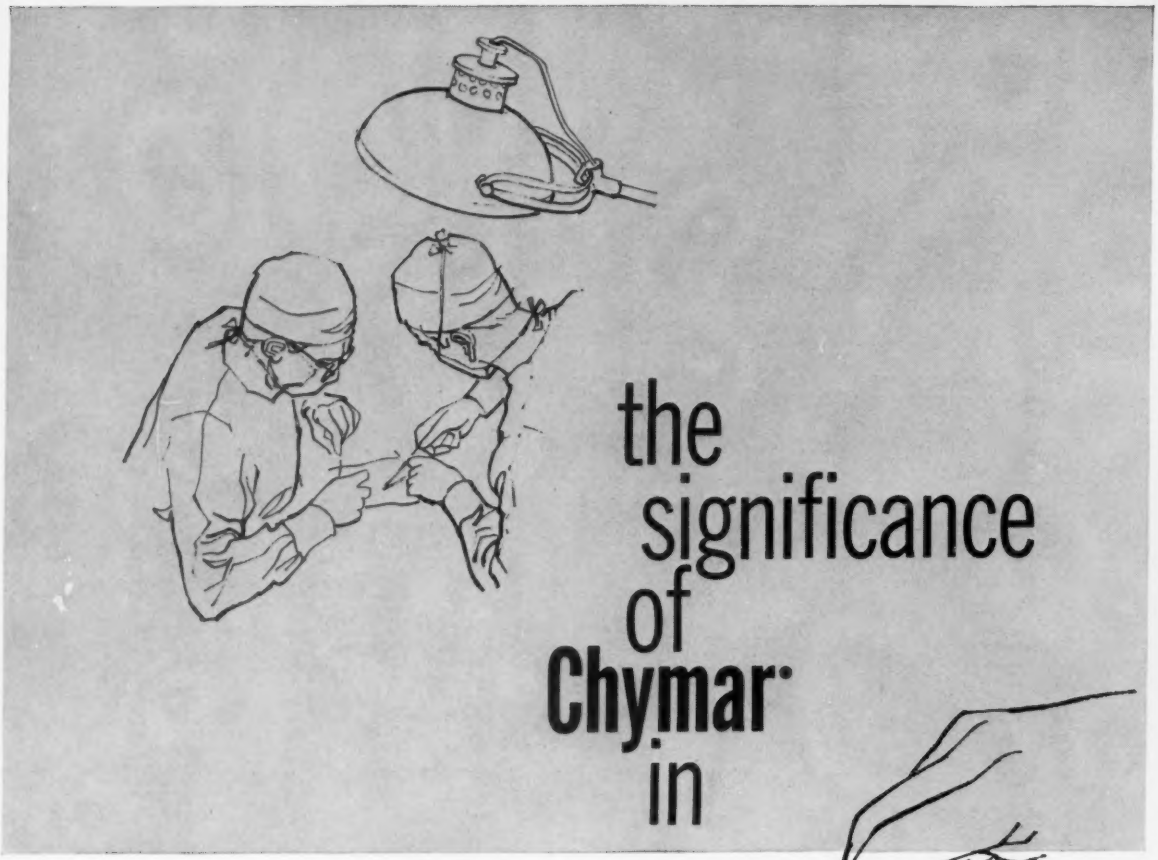

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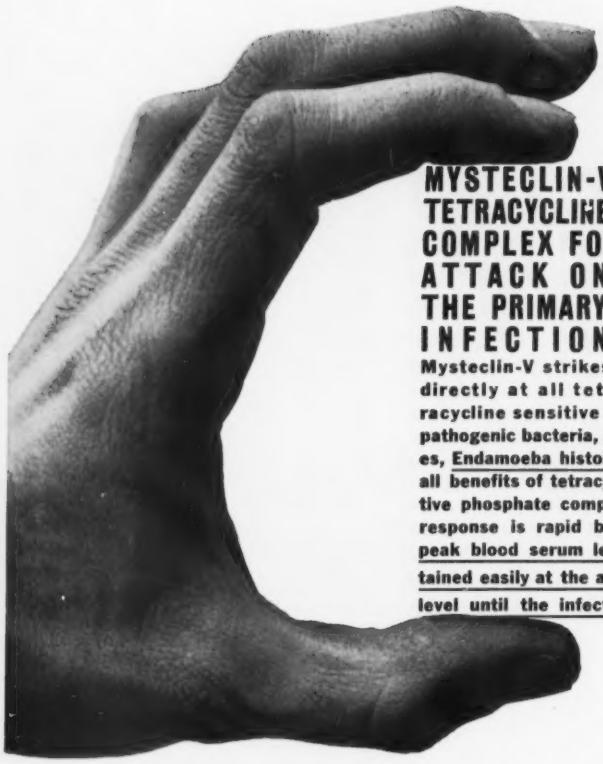

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References: 1. Cronk, G. A.; Naumann, D. E., and Casson, K.: Antibiotics Annual 1957-1958, New York, Medical Encyclopedia Inc. 1958, p. 397 • 2. Newcomer, V. D.; Wright, E. T., and Sternberg, T. H.: Antibiotics Annual 1954-1955, New York, Medical Encyclopedia Inc., 1955, p. 686.

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Bacteremia[3,5]	5	5		
Meningitis[3,5]	4	3		1**
Rocky Mountain spotted fever[3,5]	2	2		
Ear abscess with cellulitis[1]	1	1		
Lung abscess[4]	1			1
Typhoid fever[5]	1	1		
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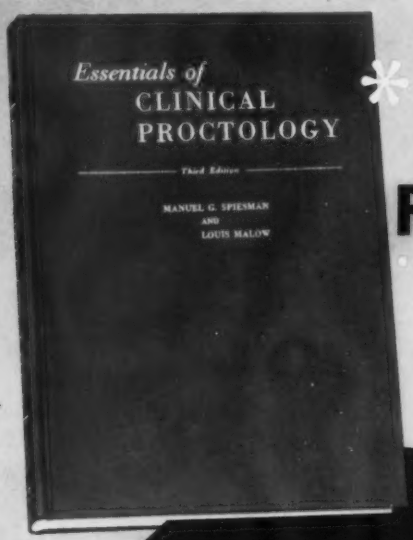

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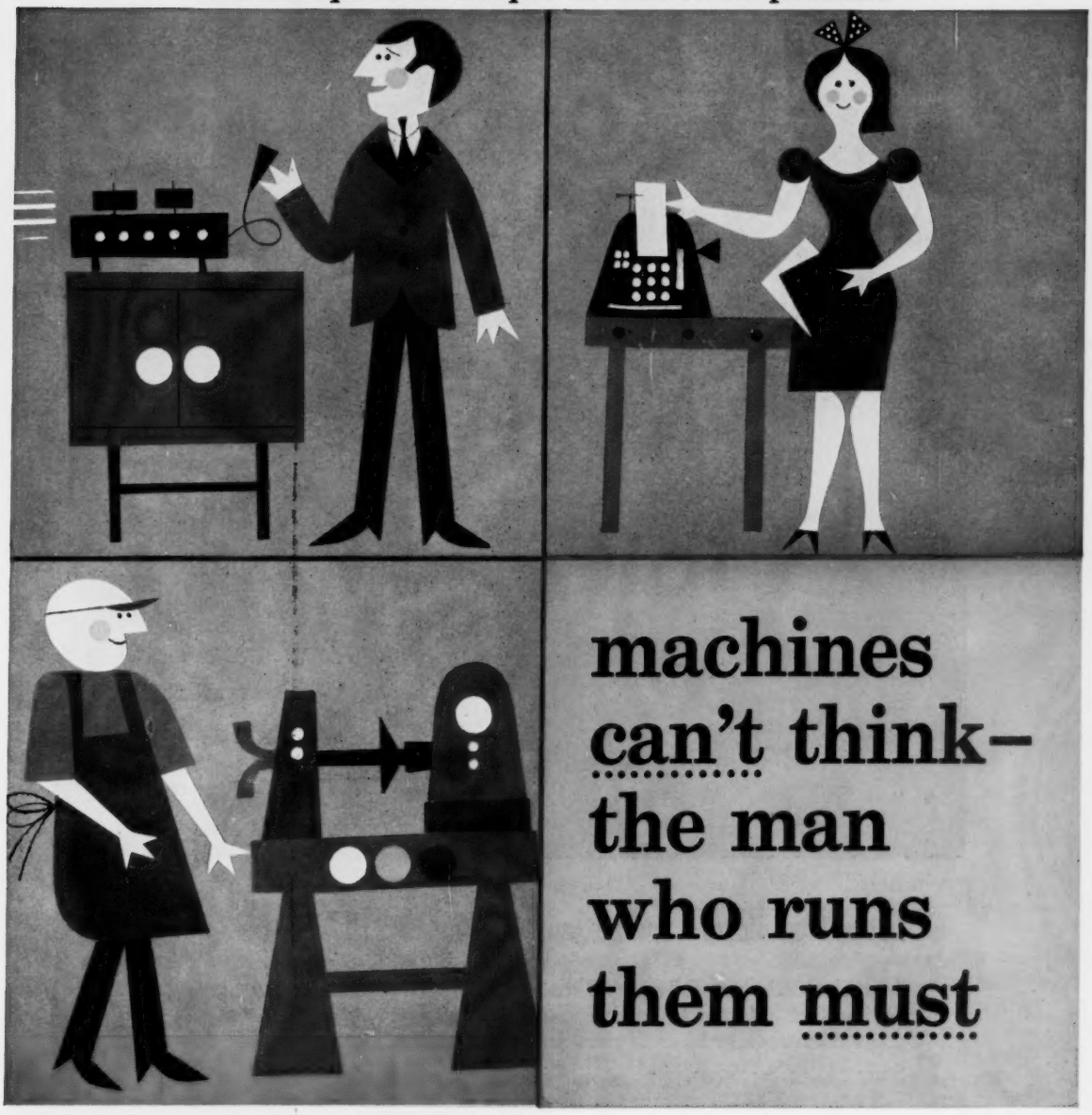

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THE ZOOANTHROPONOSES

as Occupational Diseases in the United States

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Consultant, Institute of Industrial Health
University of Michigan
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Zoonoses are diseases of vertebrate animals transmissible to man and other animals.

Anthropozoonoses are diseases of man transmissible to other animals.

Zooanthroponoses are diseases of vertebrate animals chiefly transmissible to man.

Every year some 200 disease entities are added to the total number of approximately 3,000 occupational diseases. This increment is more than the aggregate for all other medical specialties combined. It may be doubted that any professional distinction resides in this continually mounting lot of added affections, but the fact reveals the tempo of industrial medicine and the requirement for swift adjustment in meeting increased professional burdens.

The majority of the additions represents precisely new entities springing from the appearance of a new chemical compound every 24 minutes throughout the year. Many of these chemicals never become important to production. Of those that do, the majority proves innocuous as to toxic properties. There remains those highly significant ones that possess harmful properties for sufficiently exposed workmen.

A second source of the yearly increase in occupational diseases is the fact that many pathological states, long regarded only as diseases common to ordinary life, under special circumstances become true occupational diseases. It took some hundreds of years to come to the realization that scurvy as it involves captive work forces such as in the Navy or Army, manifestly becomes a characteristic occupational disease. A more immediate example is to be found in psittacosis. In the early days this disease was regarded foremostly as a threat to the owners of pet psittacine birds. Soon it became apparent that dealers readily might be involved. Still no label of occupational disease was applied. Only in recent years has the proper category appeared after the high incidence of psittacosis in the fowl packing industry brought about the full acceptance of this disease as inescapably occupational under some circumstances.

Many other zoonoses long have dwelt in a shadowy zone as to constituting work diseases. Hence comes the confession of industrial physicians of some negligence of the zoonoses as trade diseases and hence comes the declaration of will-

Presented before Institute on Veterinary Public Health, University of Michigan, Ann Arbor, October 6-9, 1958.

ingness to join with other professional groups and particularly the veterinary physicians in appraisals of the significance of the zoonotic diseases to workers and to public health in general, always their prevention being the prime concern.

There is scant need to indicate that any zoonosis as it occurs in workers in no manner is likely to exhibit clinical features dissimilar to those of the disease elsewhere arising. Yet, any occupational disease occurrence introduces peculiar circumstances setting it apart from the same disease in the nonindustrial population. At once a legal responsibility arises, the matters of compensation, fully paid medical care, the prospect of multiple cases, the significance of absenteeism, the opportunity for charges of neglect. Most important of all, the circumstances of work often provide added incentives to prevention.

The Incidence of Zoonoses as Occupational Affections

There is little justification for this presentation unless the incidence of occupational zoonoses be more than trivial. Exploration of any significant portion of the voluminous literature of the zoonoses readily discloses endless mention of the total number of human affections. Readily it becomes apparent that all too infrequently is suitable information available as to the number or percentage of victims exposed at work. What is most striking of all is the lack of statistical information on occupational zoonoses in reports in compliance with the occupational disease reporting laws common to nearly all states and similar data in connection with the Workmen's Compensation Commissions. At least four factors militate against the acquisition of incidence information from these above mentioned sources: (1) In the majority of jurisdictions compensation coverage does not embrace agricultural workers; (2) In few states are the occupational disease reporting laws enforced; (3) In those jurisdictions wherein reporting approaches completeness compiling systems are such as to group all zoonoses under the general heading "Infections" or "Infections Not Otherwise Classified;" (4) Minor involvements of all occupational diseases leading to no disability or lost time seldom are registered. In fine, there are no official statistics that may be accepted as revealing the true frequency of zoonoses as occupational diseases.

One of the striking features of zoonoses that impresses the remote onlooker is that these affections overwhelmingly stand out in those areas in which there are technical facilities that might disclose such conditions. At once two conjectures arise —either these investigative facilities were established in areas known to harbor the zoonoses or, instead, it might appear that the disclosure of manifest high incidence of these diseases in such areas is the result of intelligent explorations by those working in proximity. It follows that the lowest instances of reported zoonoses occur in those states in which there are few veterinary facilities. A more sensible estimate of the situation is that in those areas in which there is a high development of the veterinary skills there comes about such proved frequency of the zoonoses that it may be assumed that an equal or greater incidence exists in many other localities.

Some of the most forceful statements as to zoonotic occupational diseases are derivable from Dr. James H. Steele. His three dicta as to animal diseases transmissible to man are:

(1) Infection in man is usually limited to the diseased individual, and there is seldom person-to-person transmittal.

(2) The clinical and anatomical character of the disease in man is similar to that in animals provided the portal of entry is the same.

(3) The highest incidence in man is among individuals whose occupations bring them in close contact with animals or animal products.

This same investigator observes that as to brucellosis between one-half and two-thirds of all human infections can be attributed to occupational hazards. "Health authorities concerned with the disease (brucellosis) have estimated that actually there may be more than 10,000 cases (human) annually (in the United States)." If these two statements are applied one to the other and using the lower figure (one-half) mentioned by Dr. Steele, then annually in the United States as of this decade there arose some 5,000 instances of brucellosis alone as an occupational affection.

It may be urged with propriety that this method of approaching the incidence of zoonoses as occupational diseases is a dubious one. However, operating on this basis, but only to the point of regarding some published items as in error to the extent of 90%, which degree of error is not even suspected, then there remains such a presumed rate of occurrence as to be astonishing, but chiefly astonishing because of the lack of recognition of their existence as trade diseases.

The most acceptable evidence of the occurrences of the zoonoses is to be found in episode compilations for specific outbreaks of these numerous diseases. Typical of this useful source of information is a publication in 1958 on psittacosis by Fred K. Laurentz, M.D., Director of Public

Health of the City of Houston, Texas. This author alludes to 200 human cases in Texas in 1954 with exposure to turkeys constituting the source, but with no concise statement that all were of occupational origin; then refers to one Oregon psittacosis outbreak in 1956 in which there were 86 cases distinctly of occupational origin, being distributed over rendering plants, processing plants, farms and other rural facilities. Finally, the Laurentz paper is devoted to a psittacosis episode in Houston in 1956 in which 29 laboratory confirmed cases with one death were recorded. No equivocation as to work origin is permissible since this language appears: "The persons affected were all from the slaughter lines of the two plants involved." This paper, so useful in depicting the certainty attending the appraisal of the incidence of the zoonoses as occupational diseases, affords opportunity for two additional items of comment. The first is that Dr. Laurentz in a table cites the incidence of psittacosis for the United States from 1929 to 1956. For the year 1954 for the entire United States only 210 cases attributed to poultry were tabulated; yet for the same year 1954, he mentioned 200 human cases in Texas alone. The second aside regarding this paper is that officials of the State Department of Texas unofficially and personally have noted that the 1956 Houston episode is but one of no fewer than 10 known to that department for the same period.

It is fitting that in this recital of incidents that tend to reflect the incidence of the zoonoses that E. Nelson's experience (*Rocky Mountain Medical Journal* 52:40, 1956) with erysipeloid be introduced.

In thirty years of Nelson's practice, with special emphasis on industrial work, he noted that he treated over 500 cases of erysipeloid. Two hundred sixty cases occurred among packing house employees, 144 among those in rendering plants, 84 in establishments handling hides and a few in butcher shops, restaurants and fish stores. Nearly all occurred on the hand.

Erysipeloid, which is caused by Erysipelothrix rhusiopathiae, should not be confused with erysipelas of streptococcic origin. The Ery. rhusiopathiae has a wide dissemination, and infections have been reported in men, swine, sheep, mice, cattle, pigeons, horses, rabbits, fish and domestic fowl.

Erysipeloid is an occupational disease. In the cases seen by Nelson, a complete history usually revealed a small cut, which did not bleed, or an abrasion to the hand of a worker slaughtering sheep, as if a burr of the sheep had entered the skin. An incubation period of two to seven days followed; then slight pain occurred around the site of inoculation. Many a butcher insisted that the wound should be probed for a burr. Itching, throbbing, burning and tingling ensued and then a stiffness around the adjacent joint, the finger becoming swollen and tender. Then the characteristic purplish rash would slowly develop. At first there was generally a red spot on the finger. The skin condition extended slowly peripherally to the back of the hand, sometimes to the next finger, but never above the wrist. The first area involved may have completely healed when a new area became purplish.

In about 10% of the cases, there existed a slight elevation of temperature, with a mild headache and malaise. Lymphangitis and adenitis were present in 182 cases, and arthritis in 29. Most of the cases occurred in the summer months, and relapses occurred in 68 cases.

Charles C. Shepard reported in the 1947 *American Journal of Hygiene* an excellent epidemiologic inquiry that he conducted on an outbreak of Q fever in a packing house in Chicago. This report, like many others, contributes to an insight into the incidence of the zoonoses as occupational diseases. Events of this character even in their aggregate afford no basis for the over-all estimate of the incidence of any one zoonosis or zoonoses in their entirety. In this episode 31 cases of Q fever were encountered nearly simultaneously among 81 employed on the killing and dressing floor of an abattoir handling sheep and calves. Splattered blood and other body fluids attracted attention in relation to the infection transfer.

Near the same time J. V. Irons in the May 31, 1946, Public Health Reports cited a similar occurrence of Q fever in this language: "During the second and third weeks of March, 1946, an explosive outbreak of an acute febrile illness which has been identified as Q fever occurred at Amarillo, Texas. More than 40 cases, mostly in men, have been found. The illnesses varied from mild influenza-like attacks to severe pneumonitis or atypical pneumonia. It appears that inapparent infections also occurred. There were two deaths. Cases occurred among employees of a stockyard and meat-packing company, and in railroad workers and others working around the stockyards. In the stockyards, cattle, sheep, and hogs are unloaded and loaded, fed and watered, and bought and sold. Animals are transported in and out both by train and truck. Some of the animals are slaughtered and processed at the nearby packing plant. Although the packing plant handles both hogs and cattle, preliminary investigations suggested that cattle were probably involved in the human infections."

From casual observation it appears that the authors of the older brochures and textbooks on

TABLE I.
MORBIDITY RATES OF UNDULANT FEVER IN RELATION TO OCCUPATION
(Huddleson from Hardy)

Occupation	Cases 1927-1935	Population 1930 Census	Annual Rate Per 100,000
Packing house employees	103	8,000	142.5
Men on farms*	422	324,000	14.5
Women on farms	80	250,000	3.6
Others 10 years and above	371	1,375,000	3.0
Children under 10 years	15	464,000	0.4
Total	991	2,471,000	4.5

*Includes farm laborers, estimated number 74,000.

the zoonoses usually were more concerned with the occupation of the victims than is true for the more modern ones. This leads to the inclusion here of a number of older tabulations that emphasize occupations, although not emphasizing occupational diseases.

This type of inquiry toward the determination of the incidence of the zoonoses as occupational diseases might be pursued almost endlessly and almost to encompass every form of that class of disease. An element of surprise attends some of this form of delving. For example, the ship surgeon on an oceanliner observed that of all of the afflictions of the ship's crew, apart from minor traumatic injuries, only one stood out boldly — and that was erysipeloid appearing among the scores of fish butchers in the ship's galleys.

This exciting pursuit, while leading to conviction, eventuates only in a scantiness of sound statistical arrangement. While the scarcity of exact data may be deplored, there is a salutory element in the situation in that there is abundant evidence that precise investigations badly are needed, and to that objective the expenditure of public and private funds would be justified.

From the representation already set forth it must be concluded that any and all zooanthroponoses may appear as occupational diseases. All zooanthroponoses are potential occupational diseases since all vertebrate wild and domestic animals are recipients of veterinary professional observation. This being true, the task of the present appraiser at once becomes an elementary one. Since it is manifest that any and all of the zooanthroponoses may assert themselves as occupational afflictions, then it becomes unnecessary that this appraiser pursue selected zoonoses that culminate in occupational diseases to the exclusion of other zoonoses.

Despite this estimate it would be engaging here to list the 10 outstanding zoonotic occupational diseases in terms of their frequency of occurrence among workers. The scantiness of reliable occurrence data precludes even that step at the present time, but crude signposts point to the following individual diseases or groups of diseases: Brucellosis, Psittacosis, Erysipeloid, Mycotic infections, Parasitic infections and infestations, Q fever, Tularemia, Mite dermatitis, Anthrax, Leptospirosis.

These conditions already have attracted the attention of some industrial physicians.

Avoiding any detail reference

TABLE II.
MORBIDITY RATES OF UNDULANT FEVER IN RELATION TO OCCUPATION
(Huddleson from Jordan)

Occupation	Area	Per Cent Contact with Livestock	Per Cent Using Raw Milk	Cases 1936-1941	Population in Group	Annual Rate Per 100,000
Child	Rural	60	85	47	1,454,037	0.5
Farm Wife	Rural	40	100	81	1,454,037	0.9
Farm Worker (male)	Rural	100	100	320	311,776	17.1
Child and Teen age	Urban	23	77	26	1,084,231	0.4
Housewife	Urban	3	92	36	1,084,231	0.6
Merchant-professional	Urban	25	84	154	1,621,500	1.6
Packing house worker	Urban	98	20	118	15,000	131.1
Total				782	2,538,263	5.1

TABLE III.
MORBIDITY RATES OF UNDULANT FEVER IN RELATION TO OCCUPATION
(Huddleson from Jordan, Second Report)

Occupation or Group	Area	Contact with Animals		Users of Raw Milk		Total Cases 1942-1945**	Population in Group	Annual Rate Per 100,000
		No.	%	No.	%			
Child (12 yrs. and under)	Rural	19	65.6	29	100.0	29	916,768***	0.9
Teen Age	Rural	26	72.2	36	100.0	36	916,768	0.9
Farm Wife (adult f.)	Rural	56	60.9	92	100.0	92	916,768	2.2
Farm Worker (adult m.)	Rural	611	100.0	611	100.0	611	311,776+	43.0*
Child (12 yrs. and under)	Urban	5	27.8	18	100.0	18	1,621,500++	0.4
Teen Age	Urban	6	31.6	16	84.2	19	1,621,500	0.3
Housewife (adult f.)	Urban	3	3.2	77	81.9	94	1,621,500	1.4
Merchant-professional	Urban	57	26.0	159	72.6	219	1,621,500	3.3
Packing house worker	Urban	205	98.1	69	35.0	209	20,000+*	271.5*
Veterinarian	Urban	11	100.0	8	72.7	11	800+*+	250.0*

*Specific rate per 100,000.
**Through 11/15/45.
***Farm population, census 1940.
+Male farm workers, census 1940.
++Urban and non-farm population census 1940.
+*Estimated number.
+*+Approximate number.

to any one of the nearly 150 zoonoses there yet remains a few more generalities to be pursued.

Worker Exposure to the Zoonoses

By all odds veterinarians, including nonprofessional associates, constitute the group most diversely exposed to the zoonoses, potentially leading to occupational diseases. The group next in importance in terms of diversity of exposure is comprised of biological laboratory workers engaged in routine or research laboratory work on the zoonoses. Among those more directly to be regarded as in industrial pursuits but not here listed in any order of importance are:

Agricultural workers including farmers, animal husbandrymen, ranchers
Abattoir workers in all branches, wild animal ranchers, rendering plant operators, butchers, pet shop operators, zoo and circus attendants
Railway expressmen and ship crews
Biological animal product workers
Professional hunters and trappers
Garbage disposal workers
Stockyard workers

Workmen's Compensation for the Occupational Zoonoses

The majority of the United States as to workmen's compensation for occupational diseases provides coverage on a blanket basis. There are 19 states that operate on a schedule basis and two others which as of 1957 provided no coverage for occupational diseases. These states are as indicated. *Schedule coverage:* Alabama, Arizona, Colorado, Georgia, Idaho, Iowa, Kansas, Louisiana, Maine, Montana, New Hampshire, New Mexico, North Carolina, Oklahoma, South Dakota, Tennessee, Texas and Vermont and the territory of Puerto Rico. *No coverage*: Mississippi and Wyoming. At an earlier time the percentage of states providing only scheduled coverage was much higher. A precedent for limited zoonoses coverage long ago was established from the fact that numerous states included on their schedules some zoonoses such as anthrax and glanders.

Under the all-inclusive system of occupational type coverage all work places required to maintain the workmen's compensation are subject to claims for any and all zoonoses provided that disability and lost time arise and, in any event, for necessary medical expenses. The extent and circumstances for compensation and medical costs are not other than for any trade affection such as mercury or carbon tetrachloride poisoning. Unhappily, work places most likely to provide human exposure to the zoonoses are not required by law to carry workmen's compensation in most states. Notably this is true for the agricultural pursuits. Another unfortunate situation prevails. With the exception of some packing houses, the size of plants affording potential exposure is such that in-plant medical services are not a prospect. This means that neighborhood and family physicians render care for the industrial workers and more often this is limited to traumatic injury. The zoonoses scarcely may be expected to attract attention. A myriad of workmen with zoonotic affections and thus entitled to some measure of compensation has been overlooked in the distressing state of unfamiliarity with such diseases by the medical profession.

Despite ample provision for coverage recent workmen's compensation statistics by states reveal few instances of zoonoses reaching compensation facilities. For the year 1955 in the state of California there were reported to the State Department of Public Health a total of 657 instances of infective and parasitic diseases. However, this catch-all category is broken down to the point of mentioning 10 cases of brucellosis. In the preceding year, 1954, 16 cases of brucellosis are mentioned. In the state of Wisconsin during 1956, settled claims, which may represent a smaller number than the total embracing those entailing only medical expenses, included 12 cases of undulant fever, and one case of histoplasmosis, and in 1955 there were 10 cases of undulant fever. It is possible that these meager figures cited for California and Wisconsin chiefly reflect the lack of awareness and lack of diagnostic acumen on the part of physicians.

In those 21 remaining states with only schedule coverage for occupational diseases, it is possible that some or all zoonoses might be made subject to compensation awards on the contention that an infection is an instantly inaugurated affair and thus possibly might be construed to constitute an accidental injury. This moot matter chiefly is subject to legal rather than medical disposal.

It becomes possible to forecast a veritable "Hell's field" of litigation complexities as to compensation for the zoonoses. The present constitutes an era of ultraliberalization in the making of awards to worker claimants. In compensation courts is there scarely such a thing as justice for the employer. In an older and more rationally governed period, compensation rested upon established disability and lost time. Nowadays some awards are being made on the basis of the mere existence of an abnormal state in the absence of lost time or disability. Partial noise deafness provides a suitable example. Confronted with a 20% loss in hearing acuity, some workers have filed claims and sometimes have been given awards for partial disability in the absence of

lost time and frequently in the absence of diminished work capacity.

As to psittacosis, for example, Dr. E. J. Bowmer of British Columbia has devised criteria that might well guide compensation bodies in respect to that disease. His requirements, somewhat rearranged are: (1) The infection must be traceable epidemiologically; that is, a sequence of events must be produced to indicate the disease had been initiated by contact with fowl or material traceable to fowl in which psittacosis infection had been established. (2) The onset of the acute infectious fever with pneumonitis must have occurred in two or more persons within the incubation period of seven to 25 days after contact with the infected fowl or fowl material. (3) Serial x-rays of the chest must reveal migratory pulmonary involvement. (4) There must be demonstrated a specific rise in titre in serological tests carried out by appropriate laboratories.

Such exacting criteria are most desirable. However, in the United States in many jurisdictions the mere establishment of infection by psittacosis at a work place, together with the diagnosis by a licensed physician, not necessarily highly reputable, in any person employed at that exposure point, ordinarily would constitute acceptable proof of the existence of a compensable occupational disease.

In the case of zoonoses in general in humans, some may be continuing. Brucellosis in man may be a continuing affair and so may trichinosis. The time and place of infection may baffle all efforts to provide certainty. It would appear that much brush clearing is ahead in order to establish a just basis for the adjudication of some of the claims that may arise connected with the zoonoses. It would be most helpful if for every zoonosis suitable criteria might be agreed upon for the guidance of compensation bodies in such matters.

A mild effort has been made to establish a correlation between the number of worker cases reported in scientific periodicals on a specific zoonotic episode in a specific state with the Workmen's Compensation Commission report for that same state and year. Thus far it has not proved possible to detect any one scientifically published zoonotic outbreak within the compiled data of the corresponding industrial commission. Not necessarily does this reflect an untenable situation. The extent of lost time may not have been sufficient to qualify for claims. The disease severity may not have led to full disability. Wages may have been continued throughout the illness.

The essence of this section of the presentation is that ample provision for workmen's compensation for zoonoses already exists in at least 27 of the United States.

The Ramifications of the Occupational Zoonoses

In the veterinary sciences there is nothing bizarre in the occurrence of the zoonoses. In occupational health in the United States any such eventuality presently is singular and usually unexpectable. This present section assembles a miscellany of well diversified items that did or might have confronted industrial physicians.

Situation 1. HISTOPLASMOSIS (Not a characteristic zoonosis): A few months ago I appeared in Oklahoma City in the compensation courts in connection with a claim by a glass worker for total disability from silicosis. This claimant, although a glass worker, was not exposed to silica dust, silica dust being the only cause of silicosis. Likewise, he was not exposed to glass dust and if he had been so exposed, no pneumoconiosis would have been anticipated since glass dust is harmless. This workman, of retirement age and hopeful of some lifelong monies, consulted numerous physicians and by three was diagnosed as presenting silicosis. It is true the x-ray films of the chest exhibited mild deposition of calcarious nodules. However, these bore no resemblance to characteristic silicotic nodules. This claimant, in addition to his factory work, maintained a petty farm and was surrounded by a miscellaneous small lot of domestic animals. The total examination including laboratory procedures suggested an earlier histoplasmosis, although there was no activity at the time and no disability attributable to any lung condition. Despite my earnest representation that silicosis did not exist and could not have existed because of lack of exposure, the courts made an award of $5,000 to this claimant because of the testimony of his own physicians. This is an instance of iatrogenic disease in a self-seeking workman abetted by unqualified physicians.

Situation 2. TULAREMIA: In Detroit a varnish worker in the paint industry suffered from a deep seated cutaneous affection involving one arm including the axillary area. This patient was disposed to believe that his condition was attributable to phthalic anhydride, a synthetic resin. This affection bore no resemblance to the usual contact or allergic dermatitis frequently encountered in the chemical industry. Instead, foremostly this represented a glandular affection with pronounced pyogenic infection. At once I suspected tularemia. On inquiry this workman admitted that about two weeks prior to the first appearance of his condition he had been rabbit hunting and that on dressing his kill some portion of his right hand was punctured. This patient was referred to his family physician

and no subsequent report was furnished. This claim was dropped.

Situation 3. LEISHMANIASIS: Some years ago I was called upon to investigate a mysterious occupational disease among the chicle gatherers in the jungles of Yucatan and Honduras. There was an abundance of clinical material, but the numerous cases observed were limited to the chicleros that hacked away at the ule trees, paving the way for the collection of the chicle sap. Although there were numerous other occupations in this jungle work, no other workers were found involved. Quickly it became apparent that this pathologic condition was cutaneous leishmaniasis, ordinarily not an occupational disease. This disease, under several names, is fairly common in many portions of Middle America, South America and the countries of the old world similarly situated as to climate. The vector of this disease is believed to be the phlebotomus fly, chiefly a blood feeder, but also a blood sucker. So far as known, the animal reservoir of the protozoa is not known. For the native population there is no uncertainty. Although those natives never heard of the words "zoonoses," "vector," "reservoir," or "phlebotomus fly," wide was the belief that both the wild and the domestic fowl of the region harbored the disease so prevalent among them. Beyond debate, this affection constituted an occupational disease and to the extent that any credulity may be attached to native beliefs, this variety of American Leishmaniasis becomes a zoonosis.

Situation 4. CREEPING ERUPTION: In Florida an extensive small house building program was underway. These low cost houses were open beneath the first floor level. Various animals, but chiefly dogs, congregated in these shady areas. A number of telephone company workmen digging trenches for cables, a number of electricians and a smaller number of carpenters developed creeping eruption following infection by Ancylostoma braziliense. Although disability, lost time or extensive medical charges were not involved, clearly this condition constitutes a zoonotic occupational disease. That this condition is no rarity in the southern United States is attested to by the observation of 2,000 cases by one physician over 14 years, but not necessarily all occupational in origin.

Situation 5. ECTOPIC VACCINIA: A biological laboratory, among other operations, produced at its biological farm smallpox virus on heifers. The collected viral material was transported to the laboratory headquarters for eventual tubing for use by the public. Two workers, one at the farm and one at the laboratory proper, acquired ectopic vaccinia. One was on a finger, the other at the base of the nose. These minor conditions beyond question may be accepted as instances of occupational zoonoses.

Situation 6. RAT MITE DERMATITIS: In winter months in cold climates one of the more common zoonotic occupational health difficulties centers about episodes of rat mite dermatitis. In many industries heavy machinery allows for few suitable abodes for rats so that stockrooms with their diverse accumulations are favored. Repeatedly, outbreaks of highly pruritic dermatitis with lesions frequently are found in women in the breast region, in men under belts or suspenders and at times under socks. The puncta characteristic of mite bites are demonstrable and to a degree diagnostic of small insect bites. While many such conditions are not a direct outgrowth of normal employment the total circumstances relate to work.

Situation 7. COCCIDIOIDOMYCOSIS: Lt. Colonel J. H. Gordon of the U. S. Army has stated that more than 30,000 recognizable cases of coccidioidomycosis developed in the Armed Forces during World War II, but that the greater number were subclinical although autopsy reports on 50 cases have been published. Since military service constitutes an occupation, there is some justification for labeling these 30,000 cases as occupational.

Situation 8. Q FEVER: Dr. William L. Jellison, writing in a publication not yet released, notes as to Q fever in Southern California: 300 cases, with three deaths, have been investigated since September, 1947. The cases occurred throughout the area at all seasons and over a period of several years. Those affected were predominantly males in the industrial age group; however, their occupations were extremely diversified. In all, the epidemiological findings suggested three general hypotheses as to the modes of spread of the disease in this endemic area: occupation in the dairy or livestock industries, residence in close proximity to a dairy or livestock yards and household use of raw milk. No one of these possible modes of spread would account for more than one-half of the cases. Epidemiological studies have been done to determine the worth of these hypotheses and in preliminary analyses all three have been shown to be significant.

Situation 9. PSITTACOSIS: This additional situation is with respect to psittacosis among workers in a turkey processing plant in British Columbia. The total paper, not as yet published, represents a beautiful epidemiological exploration by Dr. J. J. Morrow, with some possibility that the infection originated in the United States, which is the reason for mention here. In this episode, out of 35 persons total work force in this abattoir, there were 24 clinical cases distributed over the entire plant area. In addition

there must have been at least one case of human-to-human transfer of this disease.

Zoonoses in Other Countries

By design this presentation is limited to the United States. Lest the impression be created for some that such diseases are disproportionately present in the United States, let the assertion be made that the United States may be near the bottom of the list of countries harboring such affections. Just as one example of difficulties in other lands, a portion of an editorial on leptospirosis in the *British Medical Journal* for June 28, 1958, is introduced: "In Great Britain, where only Leptospira icterohaemorrhagie and L. canicola have been recorded, leptospirosis is a comparatively uncommon disease, though an investigation of piggery workers in Scotland made by J. D. Coghlan and colleagues indicated that a certain number of cases pass unrecognized."

In many other countries, however, where a wider variety of antigenic types exists, leptospirosis presents medical and veterinary problems of great importance. For instance, epidemics of infection by Leptospira grippotyphosa involving hundreds of agricultural workers have been reported from Germany and from Israel. In the ricefields of North Italy B. Babudieri and colleagues found that about 50% of new workers developed leptospirosis, mostly due to L. bataviae, during their first year in the fields. In the military sphere D. G. Levis recorded 291 cases, caused by a variety of serological types, among troops on jungle patrol in Malaya in 1954-1955, and in one operation in Viet Nam 126 men, nearly one-quarter of the effective force, were incapacitated by the disease.

The Eradication and Control of the Zoonoses

Foremostly the eradication of the zoonoses that lead to occupational diseases is, as it long has been, the responsibility of the veterinary profession. Whenever human involvement arises the physician must take over those cases. In the avoidance of additional cases the industrial physician in his prevention program will join forces with veterinary public health.

As often implied and only softly spoken in those exposure areas wherein zoonoses are prone to arise, the community physicians, usually little experienced in these affections, may be expected to turn to veterinary public health for full guidance. That culminates in perhaps the most significant statement to be found in this small presentation. In the rise of the zoonoses as occupational affections, perforce the industrial physician and the veterinary physician find themselves in an occupational health team each with mutual dependencies upon the other.

Beyond the Zoonoses

Wholly apart from the zoonoses, many other diseases and more often accidental injuries are brought to industrial workers by or through animals. Scores of venomous insects or reptiles plague the workers. Histoplasmosis foremostly is not a zoonosis, yet often it reaches humans by way of animals. Not always is tetanus a zoonosis. Animals may serve only as carriers. Human allergies traceable to animals or animal materials distinctly are not zoonoses. The veterinary profession already fully has grasped or created the distinction, but industrial physicians, less familiar with the true zoonoses as apart from other human afflictions of animal life origin, will be served by efforts toward proper categorization.

In the same vein it becomes obvious that not all of the occupational diseases of the agricultural pursuits in their broadest implication are zoonoses. These agricultural workers ply their tasks in a multitude of chemicals that embrace the economic poisons. They are surrounded by noxious weeds, they endure excessive exposure to sunlight. Under some circumstances exposure to insect life is extraordinary, as for example in the southern states, the now vexatious exposure to fire ants, leading at times not merely to painful stings but to systemic disease.

Lastly, in this immediate recital it must be manifest that the work of the industrial physician is not restricted to occupational diseases. Those diseases may constitute his adventurous territory, but on an over-all basis lead to not more than 5% of his professional endeavors. Otherwise occupational health, a specialty in medicine, embraces an almost unlimited galaxy of activities such as a variety of physical examinations, routine care of the injured or sick, concern over the total work environment, participation in pension and retirement systems, executive health programs and a multitude of other requirements. At this immediate time it may be believed that for the average industrial physician the single difficulty of obesity in industrial workers at the moment is of far wider import than all of the zoonoses combined.

For a long time physicians working with occupational diseases have stood wavering in recognition of the zoonoses as characteristic occupational diseases. There has been reticence in out-and-out statements to that end. To reach the state of crystal firmness, let it be declared that during these sessions the total number of occupational diseases has been augmented by no fewer than 150 new arrivals. Of course, most of

these disease guests long have been about us as occupational diseases, but the occupational disease census takers, busy with the metals, the dusts, the solvents and the gases never got around to counting all these zoonotic noses.

Summary

A prime source of additions to the total number of occupational diseases is to be found in the diseases of animals that may be transferred to man — the zoonoses. The total lot of zoonoses now known approximates 150. Any zoonosis is a potential occupational disease although by no means are all instances of zoonoses occupational. A zoonosis becomes an occupational affection when the animal disease is transferred to man in the course of employment and not otherwise. The incidence of zoonoses as occupational diseases is little established. Statistical arrangements for compensation bodies commonly are such as to include the zoonoses into broad categories of infectious diseases that hamper specific segregation. The best information derives from isolated or small group occurrences, the results of which may not be extrapolated to over-all estimates. The worker groups most exposed are the veterinarians and their staffs, abattoir workers in all branches, wild animal ranchers, rendering plant operators, butchers, pet shop operators, zoo and circus attendants, agricultural workers including farmers, animal husbandrymen, ranchers, biological animal product workers, professional hunters and trappers, garbage disposal workers, freight train crewmen, railway expressmen, ship crews and stockyard workers. When a zoonosis appears as an occupational disease, in no clinical respect does it stand apart from its occurrence in the general population.

Survey on Workers' Medical Care

Details of a cooperative study to learn how adequate are health services received by unionized workers and families were recently revealed. The principals are Int. Assn. of Machinists, U.S. Industries, Inc., Columbia University and National Opinion Research Center. The objective: To find out how nearly 90 million Americans are faring under medical and hospital insurance programs supported wholly or in part by industry.

Financing this three year study is Foundation on Employee Health, Medical Care and Welfare, Inc., a joint undertaking of machinists union and U.S. Industries, Inc., which was established three years ago. Supervisor of the project is Dr. Ray E. Trussell, chairman of Columbia's School of Public Health and Administrative Medicine. Interviewing and other field work will be done by NORC (University of Chicago).

A 3,000-family sampling is contemplated. There will be 750 families in each of these types of coverage: Blue Cross-Blue Shield; indemnity type, as provided for nonoperating railway workers; comprehensive medical expense, as provided for General Electric Co. workers, and the direct service type as represented by Kaiser Foundation on the West Coast.

The survey prospectus says answers will be sought to these questions: Which is more important, protection against the catastrophic illness which is comparatively rare or the less expensive, but more common, ailment? Do covered families seek medical care which they might let go by default if they were not protected? Is coverage resulting in an actual saving of money to the employe? Is there a danger of excessive utilization if co-insurance or some other check is not provided?

Also, what relationship exists between frequency of hospitalization and the type of health insurance possessed? Can a feasible system be evolved to include medicines, eye glasses and home and office visits? To what extent do periodic health examinations and emphasis on preventive care cut down expenses for treatment? Should free choice of practitioner (including chiropractors) be given?

Dr. Trussell told WRMS the household interviews will be divided as follows: In New Jersey, 750 families belonging to Blue Cross-Blue Shield and 250 covered by the railway program, administered by Travelers Insurance Co.; upper New York State, Cincinnati and Milwaukee, with total of 1,000 families, three-fourths in the General Electric package (carried by Metropolitan Life) and remainder in the railway plan; San Francisco Bay area, 750 families affiliated with the Kaiser-Permanente program and 250 in the railway health insurance plan.

A dry run conducted recently in New York City produced provocative findings. It covered 286 unionists and 543 dependents. The study disclosed (1) Substantial use of unaccredited hospitals, (2) use of many physicians who lack staff appointments at accredited hospitals, (3) comparative rarity of coverage for home and office medical care, (4) large expenditures for drugs, (5) uneven distribution of medical costs in spite of relatively good insurance protection, (6) failure to appreciate levels of professional medical competence and (7) better coverage of hospital bills than of doctors' fees for inpatient medical care.

—*Washington Report on the Medical Sciences*, No. 604, January 19, 1959.

Eye Protection in the Chemical Industry

• ROY E. JOYNER, M.D.
Medical Director
Texas City Plant
Union Carbide Chemicals Company

A Report on Six Years' Experience with an Eye Protection Program which Cut Disabling Eye Injuries by Eighty-Eight Percent.

Eye protection programs embodying the use of various types of safety goggles are widely accepted in the chemical industry today. A study of the effects and costs of such a program was undertaken in a chemical plant employing some 2,700 workers.

The plant is located on the Texas Gulf Coast in an area highly developed industrially by the petrochemicals industries. Many irritating and corrosive chemical agents are handled within the plant. Among these are strong sulfuric and hydrochloric acid, strong solutions of sodium hydroxide, ethylene diamine, acetic anhydride and acetic acid, to mention a few. The majority of the plant population is exposed to some extent to these and other eye hazards. A rough job breakdown of the plant population is given below:

1. Office workers	100
2. Field workers	
a. Chemical operators	800
b. Maintenance men	1,000
c. Supervisors	400
d. Others	400

It can be seen from the above distribution that all except 100 of the 2,700 employees are routinely exposed in some degree to the particular eye hazards of the chemical industry.

Some idea of fluctuation in the plant population should be given here since this is important in the interpretation of the statistics which follow. During the period 1951 and 1952, the plant population averaged approximately 2,250. Beginning in 1953 and extending through 1957, the plant population has remained relatively stable between 2,600 and 2,700 employees. These data, along with the number of man hours worked, are presented in Figure 1.

During the period under study no significant changes in available medical facilities have been made so that this factor should not influence the validity of the statistics. A full time medical division staffed by a physician, three nurses and other auxiliary personnel has been in operation throughout the period of the study. In mid-1955 a change in Medical Directors was made and it is possible that this change could have influenced the number of referrals made to eye specialists (Figure 5). None of the other data should have been significantly influenced by this or any other known outside factor.

Past History of the Program

Protective glasses have been used to some extent in this plant since it began operations in 1941. Until 1948, however, little was done beyond desultory encouragement of the employees to wear the glasses and no organized enforcement was practiced. In 1948 some enforcement began on the lower supervisory level and in limited areas. In 1951 safety glasses with sideshields were made mandatory in one of the more hazardous areas of the plant. Two years later, noting the reduction in eye injuries obtained from this move, a second area followed the example. In 1954 one of the employees lost both eyes as a result of severe sulfuric acid burns. This incident had a marked effect on the attitudes toward enforcement and in the following year spectacle type safety glasses were made mandatory as minimum eye protection in all manufacturing areas of the plant. The wearing of safety glasses is now regarded as a condition of employment and while there have been isolated instances of failure, the program as a whole is generally regarded as successful and enforceable.

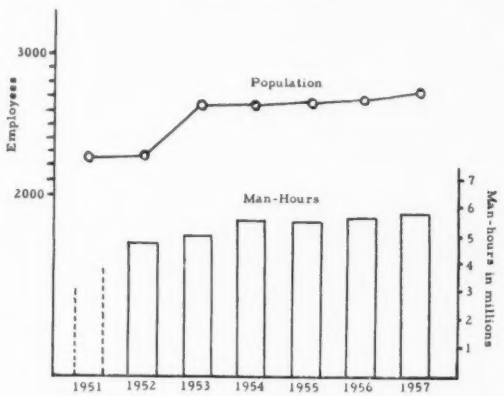

Figure 1

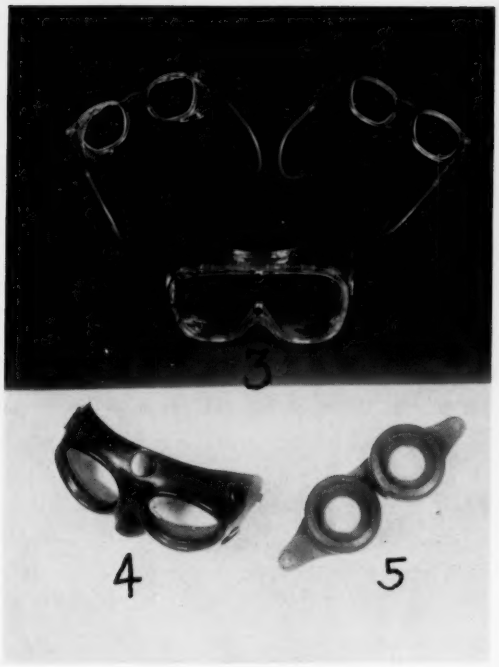

Figure 2

Current Program

Safety glasses of the spectacle type are required as the minimum eye protection in all manufacturing areas of the plant. Certain areas of the plant require that sideshields be added to afford additional protection, while a few of the more hazardous jobs demand the use of vapor-proof acid goggles and other types of specialized protection. The various types of protective goggles issued are illustrated in Figure 2. Either the basic spectacle type or the sideshield type of safety glasses are issued to the employee, both in a clear lens and a medium calobar lens which doubles as sunglasses in this area of brilliant sunshine. For those with normal vision, safety glasses are issued by the safety department at the time of employment and are replaced and maintained by this department upon loss or breakage. If visual deficiency owing to refractive error is present, the company sends the employee to an ophthalmologist for a refraction and safety glasses are made to his prescription. The entire program is carried out at company expense with no cost to the employee.

Effects of the Program

Dispensary Visit Rate: The majority of visits to the dispensary for eye complaints are made because of foreign bodies in the eye. This category may include anything from a speck of dust to a penetrating metal fragment. The total number of dispensary visits for foreign bodies is shown in Figure 3. No significant trend in these visits can be noted. It is entirely possible that this should be an encouraging fact rather than a discouraging one,

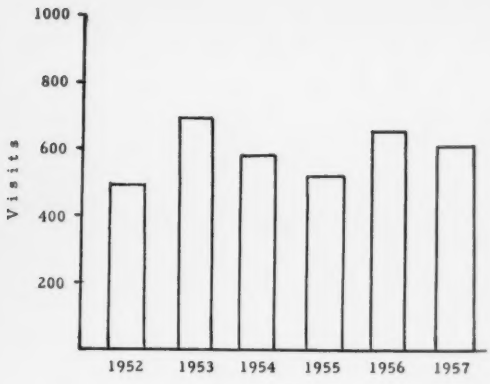

Figure 3

since it may indicate that employees realize the advantages of skilled medical care in the handling of foreign bodies. It is hoped that the relative stability of this graph indicates that while fewer incidents of foreign bodies in the eye are occurring, a greater percentage of the incidents is being reported to the dispensary. Figure 4 provides the same information calculated on the basis of the

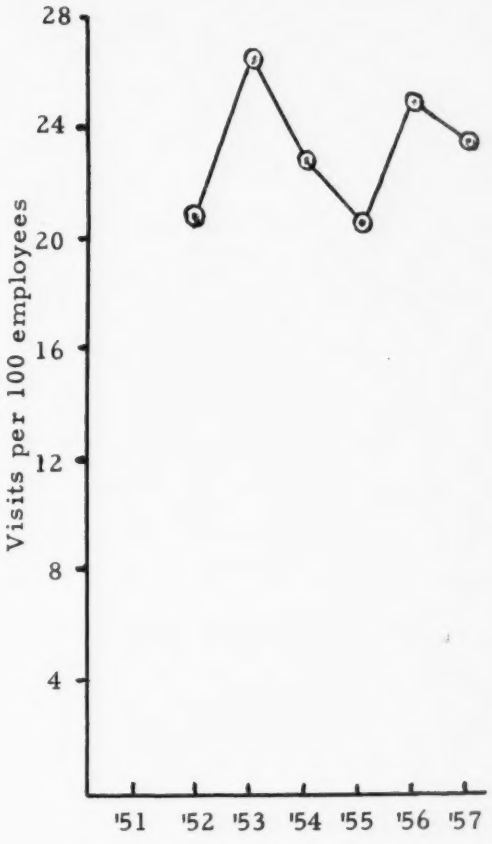

Figure 4

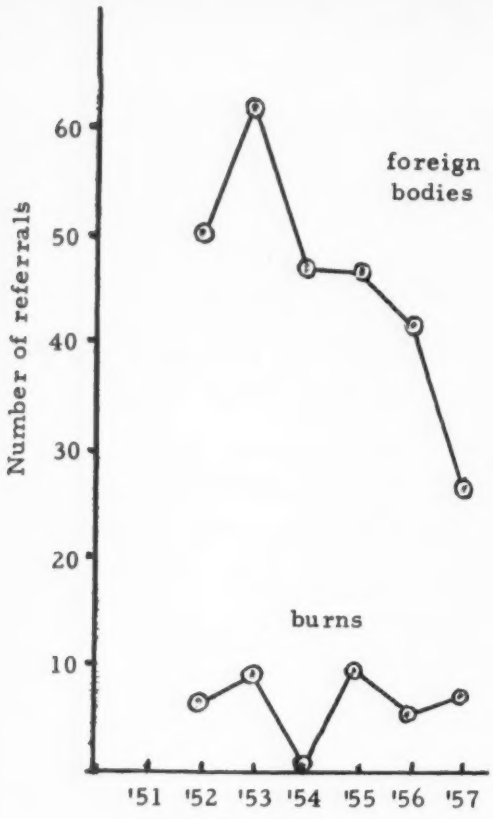

Figure 5

visit rate per 100 employees per year. Again no particular trend can be noted.

Outside Referrals: The majority of all eye injuries are handled in the plant medical division. Occasionally the severity of the injury is such that judgment demands referral to an ophthalmologist. Figure 5 reveals the number of referrals made during each year, both for foreign bodies and for chemical eye burns. From a high of 62 cases in 1953, the referral rate for foreign bodies has dropped to 26 in the year 1957. The referrals for chemical eye burns indicate no consistent trend over this six year period. It should be noted that all of these cases are technically nondisabling injuries, i.e., the employee did not lose time from work.

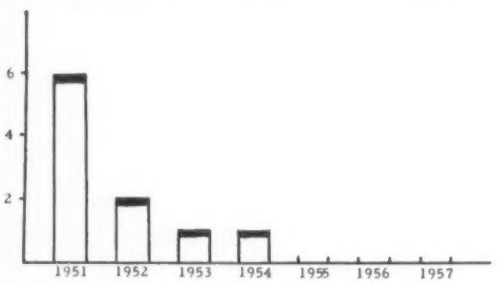

Figure 6

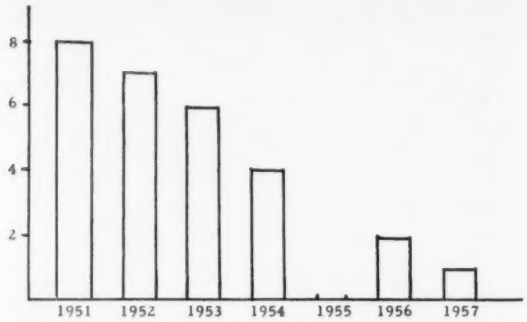

Figure 7

Disabling Eye Injuries: By our definition this constitutes an eye injury which renders the employee unable to report for work on the day following the injury. Figure 6 records the number of disabling eye injuries from chemical burns that have occurred in the plant during the period under study. The marked reduction is obvious here, as it also is in Figure 7, which registers the number of disabling eye injuries resulting from all causes during the same period. The striking difference between the year 1951, when six disabling chemical eye burns occurred, and the years 1955, 1956 and 1957, when none has occurred, is an indication of the effectiveness of the program.

Compensation Costs: Those eye injuries that are treated solely within the plant medical division generally incur no compensation costs. When an employee must be referred to an outside physician or when an employee loses time as the result of his injury, compensation costs accrue. Figure 8 demonstrates the striking reduction in compensation costs that has occurred over the past six years. The bulk

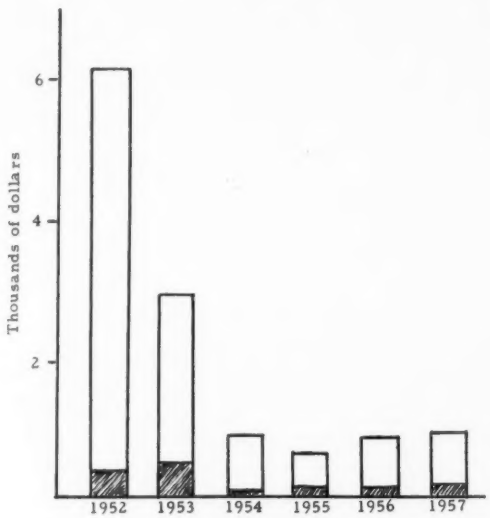

Figure 8

of this reduction has occurred in the category of foreign bodies. Omitted from the data in Figure 8 is the occurrence of the previously mentioned case of total blindness which resulted in 1954. The compensation costs involved in this incident alone were in excess of $25,000. No other exceptions in experience have been made and the graph reflects with accuracy the compensation expenditures in the other years. This is, perhaps, the greatest measurable attribute of the eye protection program. That a chemicals plant can work in excess of five-and-a-half million man hours a year at an annual compensation cost for eye injuries of less than $1,000 is notable.

Costs of the Program

The benefits of an eye protection program cannot be bought cheaply. The basic spectacle type of safety glasses costs about $3.00 per pair. Prescription glasses drive the costs much higher. Some plants have adopted in-plant optometry programs in an effort to cut this cost. This has not been tried in this plant. At present all prescription glasses are obtained through regular commercial channels.

The costs incurred during 1957 were the highest that have been recorded in plant experience. This is partly due to rising prices and partly due to the aging of the plant population and the naturally higher demand for prescription glasses. During 1957 authorized refractions numbered 696.

Details of the 1957 costs are given below:

Nonprescription glasses	Cost	$17,971.70
Prescription glasses:		
a. Refraction	Cost	10,131.50
b. Glasses	Cost	20,795.64
	Total	$48,898.84

This total represents an average cost per employee of $18.11 for the year 1957. More than one-third of these costs is a result of the current practice of issuing to the employee both clear lens and calobar lens glasses. If only clear lens glasses were issued considerable savings would be effected.

Comment

Many of the multiple benefits of a properly implemented eye protection program are obvious. There are probably other related benefits which defy measurement. For example, it is probable that a strong philosophy of eye protection originating in a plant may seep into the employees' home environment and thereby prevent some disabling eye injuries that might have occurred if the employee were not eye protection conscious.

There are those who will argue against such a program on two chief counts: The expense does not justify the results; and such a program is not enforceable. In the strict economic sense it is difficult to raise an argument to refute the first contention, since no information is available as to what costs could have been incurred if the program were not in effect. But the expenses in the case of total blindness resulting from the incident in 1954 presents some food for thought. The number of eyes saved by the program cannot be fixed with certainty, but judging only from those occurrences where safety glasses have obviously and without question prevented irreparable damage, it must be a significant figure. Experience in this plant has given rise to the purely personal opinion that safety glasses have saved irreparable damage to at least eight eyes over the past three years. If this is true the first contention is a fallacy.

As to the second count, it is an unfortunate but obvious fact that, left to their own initiative, many employees will reject the use of eye protection as inconvenient and unnecessary, feeling that as an individual "it can't happen to me." An eye protection program cannot effectively be accomplished without real and sincere support from higher management levels. A mandatory eye protection program is successful only insofar as the upper supervision is truly sold on its merits. First-line supervision, the critical area of enforcement, must know that higher management wants and expects them to enforce the program. Under these conditions a successful program can be accomplished.

Summary

Six years' experience with an eye protection program in a chemicals plant is reviewed. During this period disabling eye injuries were cut 88% and compensation costs were reduced 84%. Case referrals to eye specialists decreased by two-thirds. The advantages of the program are discussed and the costs involved are detailed. The intrinsic value of such a protective program has been demonstrated.

Heart Film

"Back on the Job," a new film which shows how a heart attack victim is returned to useful employment with the aid of a Heart Association sponsored Cardiac Work Evaluation Unit, has been produced for the American Heart Association. It is being distributed nationally for showing to lay and professional audiences by the Association's affiliates and chapters.

The film emphasizes the importance of teamwork by the family physician, the employer and the Work Evaluation Unit in determining when a cardiac patient may resume work without endangering his health. While it is chiefly concerned with a heart attack case, "Back on the Job" also recounts how victims of other heart and circulatory diseases are rehabilitated through the coordinated efforts of the patient's physician and the Work Evaluation Unit's team of cardiologist, social worker, psychiatrist, nurse and rehabilitation counselor.

WORKER'S ATTITUDES

toward the Medical Department and its Activities

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Workers' approving attitudes toward the Medical Department indicate that programs directed toward improvement of specific conditions have been effective.

In January, 1955, a comprehensive survey of employee attitudes toward the Medical Department was conducted among 1,100 Michigan Bell people in the Detroit metropolitan area. Important conclusions resulting from that survey were: (1) There was much misunderstanding and lack of information about the purposes and functions of the Department. (2) There was much interest in expansion of the periodic health examination program. (3) The visiting nurse program was looked upon as an adjunct to supervision rather than as a helpful service to employees. (4) There were many comments calling for more friendly and sympathetic care of patients.

Among the corrective measures proposed were: (1) Preparation of an information booklet about the Department for general distribution, (2) expansion of the periodic program, (3) reorganization of the visiting nurse program, (4) strong emphasis to be placed on friendly, sympathetic and prompt care of patients in the Department, (5) strict adherence to the confidential nature of medical information.

Changes embodying these proposed improvements were instituted and seemed to be working well. However, their impact on the attitude of employees generally was not known. In order to measure the effectiveness of the changes and obtain suggestions for further improvements, the survey was repeated in essentially the same form and with the same techniques in March, 1958. This report shows the trends from 1955 to 1958 and highlights some of the suggestions made on the 1958 survey.*

The survey sample, both in 1955 and 1958, consisted of a random sampling of 700 employees, 50 first level supervisors, 50 supervisors of district level and above and 300 employees selected at random who were known to have been recent patients in the Department. The response from each group, as tabulated below, was very good and showed improvement over the first survey. This was particularly gratifying for it seemed to indicate increased interest and approval of the actions taken as a result of the 1955 survey.

The percent return on each survey was:

Group	Number of Questionnaires Sent Out	Percent Return 1955	Percent Return 1958	Change from 1955 to 1958
Random Sample	700	43%	56%	+13%
Recent Patients	300	42	53	+11
First Level Supervisors	50	84	88	+4
District Level and Above	50	84	94	+10
Total Study	1100	46	58	+12

The composition of the 641 employees who returned the questionnaire analyzed by sex, department, number of visits to the Medical Department and recency of last visit to the Medical Department did not change materially from one survey to the other.

Findings

General Attitudes Show Improvement: The attitudes toward the Medical Department were more favorable on the 1958 survey than on the first study. This was true both of the responses to the direct questions and of the written-in comments. There were many comments of a favorable nature on the changes that had been made in the last two or three years.

Three basic questions used on both surveys to make up a scale of composite feeling were: "Do you feel that the Medical Department is interested in you as an individual? How much confidence do you have in the Medical Department? All things considered, how would you rate the Medical Department?"

By assigning points to each response in proportion to the degree of favorableness of the reply, a composite score was obtained for each questionnaire. This could range from a zero for

*Detailed analysis of the survey results is available on request to the Medical Director.

a person failing to make any favorable response to a score of 100 for an individual making the most favorable response to all three questions. The average score for any grouping of people is, therefore, the simple average of the scores of individuals making up the group.

Figures numbered 1 to 3 show over-all attitudes toward the Department by various groups. Of particular note is the marked improvement in attitude of those who said they had never visited the Department, which would seem to indicate that the general reputation of the Department among employees had improved. The new role of the visiting nurses probably played a part in this. The improvement among those who had been there just once, presumably for the preplacement physical examination, was also noteworthy.

The degree to which a good periodic health appraisal program can influence attitudes is demonstrated in the strikingly better response of the district level and above group, most of whom participate in the Executive Health Program.

Again, as in 1955, supervisors tended to believe that their employees had a less favorable opinion of the Medical Department than actually existed. However, both the expectation of supervisors and the actual feelings of employees were at considerably higher levels in 1958 than on the first survey.

Specific Questions Bring Variable Responses

1. *Reactions to Visits to Medical Department More Favorable*: Analysis of the multipart question (Chart No. 4) having to do with specific aspects of a visit to the Department disclosed improvement in all items, with the greatest degree of improvement on those items held in 1955 to be most in need of attention. This would indicate that the corrective action had been effective. The plan of scheduling visits by appointment seemed to be working well in the eyes of the respondents.

2. *Information Booklet of Limited Value*: As one step in meeting the need shown on the first survey for more understanding of the purposes and functions of the Department, a booklet "Here's To Your Health" was prepared and mailed to the homes of all employees and subsequently given to new employees.

To measure the effectiveness of this, those completing the 1958 questionnaire were asked if they remembered seeing the booklet and what they thought of it. Only one-third remembered receiving the booklet and about a third of these couldn't remember whether it was complete enough or not. The remaining people who recalled the booklet gave it a completely favorable vote.

It appears that, while the booklet was helpful and was seen as a good thing to do, the major part of the improvement in attitudes was due to the way people were treated rather than what they read.

3. *Periodic Examination Very Worthwhile*: Because it has not yet been possible to expand the general periodic health examination program to the degree where it would have an impact on most employees, no question bearing specifically on this point was asked. However, the comment previously made on the effect of the Executive Health Program on the attitudes of those participating in it and written-in comments on the 1958 survey indicate that this is one of the most constructive and worthwhile services of the Medical Department.

4. *Confidential Information Safeguarded*: To the question, "Do you feel that the Medical Department is doing a good job in safeguarding confidential medical information?" The results were:

Yes	55%
No	2%
Undecided	6%
Don't know and no answer	37%

While this was not a strong response, the small percentage of negative replies and the decrease in critical written-in comments on this point would seem to mean that substantial progress has been made. However, this question was not asked as such in 1955.

5. *Present Visiting Nurse Program Very Favorably Received*: Shortly after the 1955 survey, the Visiting Nurse Program was changed from one of primarily home visitation to that of carrying the services of the Medical Department to outlying buildings on a regular schedule. This change is apparently working well and is approved of.

Thirty-six percent of those completing a questionnaire work in a building regularly visited by a nurse. Four-fifths of these had had occasion to contact the visiting nurse and nearly two-thirds of these were "Very satisfied" with the contact. Nearly one-third were "Satisfied" and only 7% felt that the contact "Could have been better."

The written-in comments were very favorable to the change from a "Checking-up-on-people" basis to the present one of trying to be helpful. There were a number of requests for additional time in the buildings now covered and extension of the service to buildings not now included.

6. *Special Programs of Great Interest*: While general information about the Department tended to be forgotten, special programs were

well remembered and highly approved of. Seventy percent of those completing the questionnaire knew about the Cancer Detection Program for Women, having learned about it from their supervisors, the Michigan Bell Magazine or other employees. Forty-one percent of the women stated that they had already taken part in this program and another 13% stated that they planned to do so. Of those who had already taken part, 80% were "Very satisfied" with the handling of their case and another 10% were "Quite satisfied." Eighty percent of those completing the questionnaire had participated in the 1957 Influenza Inoculation Program. Of these, 70% thought it was "Very worthwhile" and only 9% thought it was "Of limited value."

In response to the question, "To what extent do you think the Company should be carrying on such programs?" 53% said that it was "About right as is" and 43%, "Should be doing more."

Relationship of Supervisors to the Medical Department

The major part of both surveys covered the relationship of each person as an individual to the Medical Department. In addition, however, the questionnaires that went to management people at their office location inquired about their relationship with the Medical Department as supervisor of others.

These questions were asked in a different manner on the 1955 survey and comparisons between the two studies cannot be made. It is natural that certain supervisors have not had occasion to contact the Medical Department on medical problems. For those who have, the evaluation of the contacts is quite favorable, particularly at District and Division Level. Again, the contacts made under the Executive Health Program may have made other contacts easier and more helpful.

The first question was, "How much does the Medical Department help you in the day-to-day medical problems you encounter in your department?" The responses for the 1958 survey were:

	First Level Supervisors	District and Division Level
	1958	1958
A Great Deal	18%	28%
Quite a Bit	41%	31%
Some, But Not Much	14%	13%
None at All	0	0
Have Had Little or No Contact	25%	26%
No Answer	2%	2%

The other question was: "How would you rate the contacts you have had, as a supervisor, with the Medical Department?"

	First Level Supervisors	District and Division Level
	1958	1958
Outstanding — Most Helpful and Complete	10%	21%
Above Average — Helpful and Complete	34%	45%
Average — Contact Was Okay	34%	15%
Below Average — Not Helpful or Complete	2%	0
Have Had No Occasion To Contact Them	18%	17%
No Answer	2%	2%

On the average, however, the contacts made as a supervisor of others were not rated as high as the visits made as an individual. This is not surprising, since the contacts as a supervisor may involve the more difficult problems.

The written-in comments indicated that a great deal of improvement had taken place in the last two or three years. The critical comments referred to the forms that were used and the fact that supervisors did not always know what was expected of them in handling of medical problems.

Summary

1. Attitudes toward the Medical Department have improved considerably since 1955. The greatest improvement has been the areas held at that time to be most in need of correction, indicating that the action has been effective.

2. These attitudes seem to be formed mainly by what one experiences, some by what one hears and last by what one reads. Thus, personal contact and specific programs carry more impact than general information.

3. Courteous, prompt and friendly care, combined with a personal interest in each individual, has been a most important factor in improving attitudes as judged by the written-in comments.

4. Supervisors seem to feel the need for more information on their relationships to the Medical Department, but personal contacts as patients make business contacts easier and more helpful.

5. There is great interest in participation in the periodic health examination program and in having the visiting nurses spend more time at the buildings outside of downtown Detroit. Special health programs aimed at detecting or preventing disease are well received and make a significant contribution to improved employee health and morale.

The Organization and Administration of OCCUPATIONAL HEALTH in the Federal Republic of Germany

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The Occupational Health Program in Germany today is administered by the Government Medical Inspector of Factories and the Works-Doctor. The Government Medical Inspectors are Civil Service employees, the Works-Doctors are industrial physicians.

The progress and expansion achieved in industry and technology in the course of the last century made it necessary to charge doctors with the tasks of industrial medical protection of the working population. In Germany doctors were first employed by large firms of the chemical industry, where such a service has been in existence since about 1890. The activities of factory doctors proved to be so useful and important that in the course of time more and more works followed this example. Thus a works-doctors' service was built up.

In 1853 factory inspectors had been appointed according to the provisions of protective legislation; this institution is known today as the factory inspectorate ("Gewerbeaufsicht"). In 1954 it could look back upon 100 years of activity. In the elaboration of the trade regulations issued in 1869 and in the Accidents Insurance Acts, the first of which was passed in 1891, the State recognized that in combating and preventing industrial accidents and occupational diseases important tasks had to be conferred upon the medical officer.

The Land of Wuerttemberg was the first to employ an industrial medical officer. In 1905 the member of its Medical Council responsible for industrial hygiene was appointed part-time officer of the factory inspectorate. In 1906 Baden was the first Land to appoint a doctor Factory Inspector. In 1909 Bavaria created the post of an "official Factory Inspector of the Land." In 1919 Saxony followed, and in 1921 Prussia appointed five medical inspectors of factories (Industrial Medical Councillors). In connection with the decrees concerning the extension of accident insurance to occupational diseases (the first was issued in 1925 and the third passed in 1936) which conferred important tasks of the practical implementation of these decrees upon the Government medical officers, the service of medical factory inspection developed in such a way that in 1937 every Land in Germany was employing Government medical inspectors of factories.

The Present Situation of Occupational Health in the Federal Republic of Germany

Today two organizations are mainly concerned with occupational health. These are the Government Medical Inspector of Factories and the Works-Doctor.

The Government Medical Factory Inspectors are civil servants of the Länder. They belong to the institution of the general factory inspectorate. In consequence of the constitutional structure of the Federal Republic of Germany there is no uniformity as to which of the supreme Land authorities are competent for the field of medical factory inspection. In some Länder, for instance in Baden-Wuerttemberg, Bavaria, Hamburg, Hesse, Lower Saxony, Northrhine-Westfalia, the Rhineland-Palatinate and the Saar, medical factory inspectors belong to the

Ministries of Labor and Social Welfare. In other Länder, for example in West-Berlin, Bremen and Sleswick-Holstein, they are subordinate to the Health Department of the Ministry of the Interior or to the Senator of Public Health respectively. The chief medical inspector in West-Berlin, Bremen, Hesse, the Rhineland-Palatinate and Sleswick-Holstein is at the same time responsible for industrial medicine and occupational diseases in the respective Ministry of his Land. The others are either subordinate agencies of their ministries, such as in Bavaria and Lower Saxony, or are responsible to a Land-president or to a board of factory inspectors. The medical officer of the Federal Railways has his headquarters in the Social Office of the Federal Railways and has the functions of a medical inspector of factories.

The Federal Ministry of Labor in Bonn employs a doctor who is responsible for questions of industrial medicine and occupational diseases and is mainly concerned with the preparation and the drafting of laws and decrees in the field of occupational health. He works in close cooperation with the medical inspectors of factories of the Länder. Table I gives some information on the distribution of medical factory inspectors and their offices in the various Länder.

Some of the Länder have enlarged the offices of the medical inspectors and turned them into modern institutes for industrial medicine. They are listed in Table II.

Offices of Medical Factory Inspectors in the Lander

The tasks of the medical inspector of factories are laid down in the rules of service issued by the Länder. They may be grouped as follows:

(1) Advising trade-boards and inspectorates of mines, inspection of industrial and mining enterprises with respect to questions of industrial medicine and hygiene; supervising the implementation of statutary regulations concerning the protection of health in establishments; giving advice to enterprises and supervising their facilities for first aid and rescue work; carrying out serial examinations of workers; advising works-doctors and organizations of employers and employees; information and instruction of employers and employees on problems of industrial medicine and hygiene; scientific investigations into questions of industral medicine and hygiene, and statistical inquiries.

(2) Looking after workers exposed to special hazards in factories or at home and those for whom serial examinations prior to employment were prescribed. All these examinations cannot be carried out by them personally on account of the relatively small number of medical inspectors of factories. Therefore, the medical inspector may, on the basis of various decrees and regulations, authorize so-called "Supervisory Doctors" (appointed factory doctors) to carry out these official functions. Some examples for this are: the decrees on lead work, on benzol and materials containing benzol, on work in compressed air, on protection against silicosis in the ceramic industry, on work with x-rays and radioactive substances, on the supervision of personnel in hospitals or other medical establishments, etc. If such a group of workers belongs to an enterprise employing a works-doctor, the medical factory inspector is likely to authorize this doctor as Appointed Factory Doctor. In the Federal Republic of Germany there are at present some 900 such appointed factory doctors.

(3) Implementation of the decree on the extension of accidents insurance to occupational diseases: At present the fifth decree is in force whose catalogue comprises 40, or more precisely, 42 groups of diseases. The handling of the reports on cases of sickness that have to be sent to the medical inspector of factories, the examination of these persons and the statement on their diseases is an important and responsible job. In view of the fact that in the last few years 52,000 to 54,600 cases of occupational diseases were handled in the offices of the medical inspectors it is understandable that this work takes up an average 50% of the total activities of the medical factory inspectors. The sixth decree which is underway will further increase

TABLE I.

Land	Doctors	Chemists	Physicists
1) Baden-Wuerttemberg	5	—	—
2) Bavaria	10	1	—
3) West-Berlin	4	—	—
4) Bremen	1	—	—
5) Hamburg	2	—	—
6) Hesse	3	—	—
7) Lower Saxony	4	1	—
8) Northrhine-Westfalia			
a) Düsseldorf/Northrhine	4	1	—
b) Bochum/Westfalia/Lippe	8	1	—
9) The Rhineland-Palatinate	3	—	—
10) Sleswick-Holstein	2	—	—
11) Saarland	3	—	—
12) German Federal Railways	1	—	—
Total:	50	4	0

TABLE II.

Land	Doctors	Chemists	med.-tech. assistants
1) Bavarian Land-Institute of Industrial Medicine, *Munich*	9	1	9
2) Land-Institute of Ind. Medicine and Hygiene of Lower Saxony, *Hannover*	5	1	3
3) Institute of Industrial Medicine, *Saarbrucken*	3	—	1
4) Institute of the Med. Factory Inspector for Westfalia-Lippe, *Bochum*	8	1	4

the work to be done by the medical factory inspectors.

The Works-Doctors' Service is not regulated by law in the Federal Republic of Germany. Entrepreneurs employ works-doctors on a voluntary basis. The contracts between entrepreneurs and works-doctors are based on an agreement of March 1, 1953, which was concluded between the Federation of German Employers' Associations, the Federation of German Trade-Unions and the Association of Works-Doctors and in which the Federal Chamber of Physicians and the Federal Ministry of Labor participated. The works-doctors service is to regulate and supervise the conditions regarding industrial medicine and occupational health in the factory resulting from the special requirements of the works. The works-doctor has to advise the management and the works-council on all relevant questions and to look after the employees at their work. Medical assistance has to be given to able-bodied workers on the premises, if it is necessary and desired by the worker. In cases of accidents or occupational diseases the works-doctor provides first aid and the first treatment. Continued treatment is given only after consultation with the family doctor.

At present there are some 1,000 works-doctors in the Federal Republic of Germany who are organized in the Association of Works-Doctors. About 50% of them work whole-time and about 50% part-time. In fact, these figures will be slightly higher, because not all works-doctors are members of the Association. Some factories in the heavy industries have provided works ambulances with modern, versatile equipment which may constitute effective aid to members of the works. The close cooperation between this ambulance service and free lance doctors is considered very important.

In summary it may be said that at least 2,000 doctors participate in the practical carrying out of occupational health in the factories.

Research in the Field of Industrial Medicine

Unfortunately there has so far been no central institute of industrial medicine and hygiene and no special clinic for occupational diseases in the Federal Republic of Germany. The Federal Institute of Occupational Health in Koblenz does, it is true, employ a doctor, but is mainly concerned with technical problems of the protection of labor. Before World War II, the former Health Office of the Reich in Berlin had a department of industrial hygiene. The Federal Health Office, which is at present in Koblenz, has not set up such a department. At the Universities there is only the State Institute of Research into Industrial Pulmonary Diseases and Industrial Hygiene at the University of Muenster/Westfalia which is mainly concerned with dust problems.

Heavy industry has some major institutes, some of which are: the Institute of Industrial Hygiene and Pharmacology of the Badische Anilin- und Sodafabrik, Ludwigshafen/Rhine; the Laboratory of Toxicology and Industrial Hygiene of the Farbenfabriken Bayer A.G., Wuppertal-Elberfeld; the Silicosis-Research-Institute of the Rheinpreussen A.G. for Mining and Chemistry, Homberg/Lower Rhine.

The carriers of accidents insurance (the Employers' Liability Insurance Associations) have at their disposal the modern, well equipped institutions of the Dust-Research-Institute of the Federation of Industrial Employers' Liability Insurance Associations in Bonn and the Silicosis-Research-Institute of the Employers' Liability Insurance Association of the mining industry in Bochum. In this connection mention should also be made of the silicosis hospital in Kloster Grafschaft-Hochsauerland with 180 to 200 beds which, in the area of the industrial district of the Ruhr, is mainly devoted to the therapy of industrial pulmonary diseases.

Furthermore, two scientific research societies must be mentioned:

(1) The Deutsche Forschungsgemeinschaft (German Research Society) in Bad Godesberg. Here the Commission on Research into Silicosis deals with all relevant questions of chemistry, physics, mineralogy, clinical work and pathological anatomy. The Commission on Investigation into Working Materials Involving Health Hazards is mainly concerned with scientific investigations into the maximum concentration of noxious gases and gaseous agents at work places. Finally the Commission on Occupational Cancer is trying to find out the relation between occupational influences and the formation of tumors.

(2) In the framework of the Max-Planck-Society for the Advancement of Science, the Institute of Industrial Physiology in Dortmund, in close connection with industry and economy, carries out the investigations required in the field of industrial physiology, psychology and dietetic physiology.

The German Society of Occupational Health in Frankfort (Main) occupies a special position. It is composed of representatives of the employers, employees, insurance carriers, of science and of the authorities. A medical and a technical committee deal with problems of industrial medicine and hygiene, endeavor to spread among the population the necessary information on industrial health protection and the prevention of occupational diseases, and remain in contact

with the respective organizations in foreign countries. Biennially all interested circles meet at a congress on occupational health and industrial medicine where the participants are informed about recent discoveries and experience in this field.

Conclusions

The organization of the medical inspectors of factories, as part of the government authorities of the general trade inspectorate and of the inspectorate of mines, has proved to be able to solve the problems facing it, if the necessary staff of doctors, chemists and technical and administrative assistants is available. The employment of physicists in the offices enlarged into institutes of industrial medicine would be desirable.

Though the lack of uniformity with respect to the different government departments to which the medical inspectors of factories are responsible in the various Länder has not led to any considerable difficulties, it does not appear to be expedient. It would be desirable that all medical inspectors would generally be responsible to the same government department, either to the Public Health Section of the Ministries of the Interior or to the Labor and Social Ministries. Considering the nature of the special activities of the medical inspectors it would be most logical to affiliate them to the last mentioned ministry. At the same time, however, the Chief Medical Inspector should be attached to the Land Ministry in the same way and of equal status as the expert on technical problems. No difficulties have occurred in the cooperation between medical inspectors and works-doctors. It has proved to be advantageous and successful.

The Works-Doctors' Service, too, has proved its worth. The agreement on the Works-Doctors' Service of March 1, 1953, has, in the course of the last few years, led to certain complaints, because sometimes section five was disregarded. It provides that prior to the employment or discharge of a works-doctor the competent medical inspector of factories should be heard. A circular of the Federation of German Employers' Associations, the Federation of German Trade-Unions and the Ministry of Labor once again stressed the importance of this provision.

From time to time differences of opinion occurred between general practitioners and works-doctors on the treatment of members of a factory. With some good will on the part of all concerned such difficulties could easily be overcome by negotiations with the medical organizations on the basis of the agreement of March 1, 1953. In some respects the position of part-time works-doctors among general practitioners is not very satisfactory. So far none of the parties to the agreement on the Works-Doctors' Service of March 1, 1953, expressed the wish for a settlement by law. However, a Works-Doctors' Committee has been set up within the Federal Chamber of Physicians with the aim of creating as firm and clear a basis for the activities of works-doctors in the general medical service as possible. The committee is trying to solve this problem in the near future.

The importance of Works-Nurses for the expansion of industrial health is steadily increasing. It is desirable that they should firmly organize themselves so as to be able to represent more effectively the special interests of their profession as well as the problems of their education and follow-up training.

The Working Environment

A training manual, *The Industrial Environment—Its Evaluation and Control* has been issued by the Public Health Service, U. S. Department of Health, Education, and Welfare.

The new publication is a syllabus of the short courses which are offered for industrial hygiene engineers and chemists at the Occupational Health Field Headquarters of the Service in Cincinnati, Ohio.

The publication is devoted primarily to fundamental principles and methods employed in the evaluation and control of the working environment. It incorporates comprehensive reference materials, lecture outlines covering such areas as sampling analysis and engineering control measures, and laboratory exercises used in the courses. The manual includes a special section dealing with specific occupational health problems and their solutions.

The 364-page syllabus has a special comb binding and arrangement for the insertion of any new material that may be subsequently developed. It is offered for sale by the Superintendent of Documents, Government Printing Office, Washington 25, D. C. (Public Health Service Publication No. 614) $2.75.

A STUDY of ARTERIAL PHOSPHORUS

in Experimentally Induced Atherosclerosis

- DONALD T. FORMAN, M.D.
- DAISY McCANN, M.D.
- R. B. HAHN, M.D.
- R. E. MOSHER, M.D.
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Detroit, Michigan

According to this report, phosphorus plays a definite role in the development of cholesterol induced atherosclerosis in rabbits.

Atherosclerosis is a disease of major importance to industry. The industrial physician is well aware of the toll exacted by this disease in time, talent and money. The widespread research effort to establish its etiology has been rather disappointing. In a recent paper by Raab entitled "Neurohormonal Atherogenesis"[3] a hypothesis is given which deals with the formation of atherosclerotic lesions. It is suggested that a chemical combination between catecholamines and phospholipids may take place in arterial tissue with resultant atherosclerosis. An investigation by Dury[1] in which rabbits were injected with epinephrine seems to indicate that a greater arterial phospholipid concentration results as compared to controls.

It has been observed in this laboratory that the arteries of rabbits with cholesterol induced atherosclerosis contain unusually high concentrations of phosphorus in relation to control animals. Much of this appeared to be present in arterial tissue from which phospholipids had been extracted. The present communication describes a detailed discussion of this earlier observation. Isotopic P^{32} was used to permit a study of autoradiograms from normal as well as diseased arteries and to determine, if possible, a general idea of how the phosphorus is built up in the atherosclerotic process. The two items of interest in this presentation are (a) the concentration and radioactive count of phospholipid phosphorus in arterial tissue, and (b) the concentration and radioactive count of phosphorus in the arterial residue after phospholipid extraction in both normal and atherosclerotic rabbits.

Supported by the Michigan Heart Association and Ciba Pharmaceutical Products, Inc.

Experimental

A group of 19 rabbits were used in this experiment. Five animals were reserved as controls and fed a normal rabbit chow. To the remainder was given the same basic diet to which had been added 10 cc of corn oil and one gram of cholesterol to the daily ration. Over a period of 12 weeks each animal of both the control and experimental group was given, by subcutaneous injection, a total of 143 μc of P^{32} as phosphate. The dose was divided into 11 injections averaging 13 μc each. At the end of the 12 week period all rabbits were sacrificed, the aortas removed and sectioned longitudinally. The specimens were sealed in Saran wrap and placed intimal side down on No-Screen Medical X-ray film in a suitable cassette for a period of 48 hours to obtain autoradiograms. Each artery in turn was transferred to a Waring blender which contained 30 ml of an alcohol-ether mixture (3:1). After maceration of the tissue, the whole mixture was transferred to a beaker and the solution brought to a boil to effect the extraction of the phospholipids. The mixture was filtered free of residue, evaporated to dryness and digested with chloric acid.[2] A final dilution to 25 ml in a volumetric flask was made. Fifteen milliliters of this solution was transferred to a 50 ml beaker containing 8 mg of NaH_2PO_4. Magnesia mixture was then added and the solution neutralized with concentrated ammonium hydroxide. This process precipitated the total phosphorus content as magnesium ammonium phosphate. (A 5% by volume excess of ammonium hydroxide was added to insure complete precipitation.) On the dried precipitate, weighing approximately 10 mg, the radioactive count for P^{32} was made in a mica end-window Geiger Tube (Tracerlab TGC-2) and

scaler. The chemical determination of the extract for phospholipids was made on the remainder of the solution (10 ml) employing the chloric acid method.[2]

The arterial residue obtained from the phospholipid extraction (herein referred to as residue phosphorus) was digested with a perchloric-nitric acid mixture to destroy the organic components. The resulting digest was then transferred with distilled water to a 50 ml volumetric flask. Twenty-five milliliters of this solution was added to a beaker containing 8 mg of NaH_2PO_4 and the whole precipitated as magnesium ammonium phosphate on which the P^{32} radioactive count was made. Chemical analysis of the remaining 25 ml aliquot was obtained by precipitation of the phosphate as ammonium molybdiphosphate. This precipitate was then titrated with standard sodium hydroxide to determine the phosphorus content.

Discussion

Column 1 of Table I presents the ratios obtained from dividing phospholipid P^{32} activity in counts per minute (C.P.M.) by total phospholipid phosphorus in milligrams determined by wet analysis. The ratio of 0.90 would seem to indicate that approximately as much radioactivity per unit weight of phospholipid phosphorus is to be found in the normal as in the diseased arterial tissue. Column 2 shows quite a different picture. The residue phosphorus of arterial tissue (after phospholipid extraction) in the atherosclerotic group has 1.86 times the radioactivity per unit weight of phosphorus as is obtained in normals. This indicates that something dynamic is in process and that the equilibrium which obtains favors the retention of P^{32}. In other words, an infiltration process is taking place which demands more phosphorus than is seen in the phosphorus metabolism of arterial tissue in the controls. The differences in these ratios of 0.90 to 1.86 would appear to indicate that phospholipid phosphorus is transported to the artery after phospholipid synthesis elsewhere. This, then, would represent a deposition of phospholipids in arterial tissue which is separate from the incorporation of residual phosphorus. It has been suggested by Raab in a private communication that this residual phosphorus may derive its origin from degenerated phospholipids. In an earlier unpublished experiment conducted in this laboratory in which the same procedure was used, except that Ca^{45} was substituted for P^{32}, autoradiograms showed heavy calcium deposition in plaqued areas, as well as more than normal concentrations throughout the entire artery. This suggests the possibility that residual phosphorus is associated with calcium in a phosphorus calcium complex. Column 3 shows total P^{32} C.P.M. divided by the total phosphorus (phospholipid phosphorus plus residual phosphorus) in milligrams.

Table II is based entirely on the wet analysis

TABLE I.
RATIO OF P-32 C.P.M. TO P IN MILLIGRAMS FOR PHOSPHOLIPID AND RESIDUE P

Rabbit No. (Induced atherosclerosis)	Column I Phospholipid P P-32 C.P.M. P in Mg	Column II Residue P P-32 C.P.M. P in Mg	Column III Total P-32 C.P.M. Total P in Mg
1	592	815	701
2	546	795	678
3	1069	995	967
4	849	1100	995
5	726	995	845
6	736	1050	880
7	920	736	814
8	920	1010	975
9	666	1110	889
10	406	1060	648
11	510	675	747
12	689	955	802
13	384	1040	606
14	586	906	746
Average	713	946	807
Normals			
15	612	440	499
16	775	529	603
17	537	500	518
18	818	647	518
19	1229	427	675
Average	794	509	563
P-32 C.P.M. Atherosclerotic / P-32 C.P.M. Normals	0.90	1.86	1.43

TABLE II.
CHEMICAL ANALYSIS FOR PHOSPHOLIPID P AND RESIDUE P IN AORTIC TISSUE

Rabbit No. (Induced atherosclerosis)	Wet Wt. of aorta in grams	Phospholipid P Mg/Gm Aorta	Residue P Mg/Gm Aorta	Total P Mg/Gm Aorta
1	1.037	0.826	0.810	1.636
2	1.386	1.035	1.150	2.185
3	0.855	0.731	0.815	1.546
4	0.954	0.455	0.563	1.018
5	0.997	0.721	0.570	1.291
6	0.838	0.888	0.416	1.304
7	0.383	0.580	0.580	1.160
8	1.037	0.719	1.105	1.824
9	0.834	0.950	0.943	1.893
10	0.668	0.749	0.437	1.186
11	0.302	0.368	0.845	1.213
12	0.482	0.612	0.498	1.110
13	0.729	1.062	0.548	1.610
14	1.654	0.603	0.597	1.200
Average		0.736	0.706	1.441
Normals				
15	0.594	0.234	0.422	0.656
16	0.523	0.213	0.409	0.622
17	0.628	0.275	0.488	0.763
18	0.487	0.232	0.251	0.483
19	0.325	0.170	0.376	0.546
Average		0.225	0.389	0.614
P (Atherosclerotic) / P (Normals)		3.27	1.81	2.34

for phospholipid phosphorus and residue phosphorus in milligrams per gram of arterial tissue. On this weight basis it will be seen that the largest gain in phosphorus is in the phospholipid fraction which shows a ratio of experimental to control animals of 3.27, while that of residue phosphorus is 1.81. The over-all increase of total phosphorus in the arteries of experimental to control animals presents a ratio of 2.34. On a percentage basis, phospholipid phosphorus to total phosphorus in arterial tissue increases from 34.2% in controls to 51.4% in the atherosclerotic group, while residue phosphorus decreases from 65.8% in controls to 48.6 in the arteries of the experimental animals. Another way of stating the same thing is that phospholipid phosphorus contributes 1.54 and residue phosphorus 0.80 to the total phosphorus ratio increase of 2.34 as shown in the last column of Table II.

Data which are of interest may be seen in Table III in which P^{32} C.P.M. are given per gram of aortic tissue. Phospholipid P^{32} in the experimental group compared to controls gives a ratio of 2.94. This ratio approximates that found by chemical analysis in this group as seen in Table II, or 3.27. For P^{32} residue phosphorus the P^{32} C.P.M. per gram of aortic tissue in the experimental compared to the control group is 3.42. This is in good agreement with the analytical findings, since in Table I it is seen that for every milligram of residue phosphorus there is 1.86 times the radioactivity found in normals. In Table II it may be seen that the ratio of residue phosphorus increase over normals is 1.81. The radioactivity then, per gram of aortic tissue, should have a ratio of approximately 1.86 times 1.81, or 3.37 when one compares the experimental group to the normal animals. The actual ratio of 3.42 shown in Table III is in good agreement with this value.

TABLE III.
P-32 C.P.M. PER GRAM OF AORTIC TISSUE

Rabbit No. (Induced atherosclerosis)	Phospholipid P-32	Residue P-32	Total P-32
1	489	657	1146
2	563	920	1483
3	736	863	1599
4	386	625	1011
5	523	569	1092
6	706	440	1146
7	534	410	944
8	660	1120	1780
9	632	1055	1687
10	304	463	767
11	335	572	907
12	422	478	890
13	406	572	978
14	353	542	895
Average	504	663	1167
Normals			
15	143	185	328
16	165	216	381
17	148	247	395
18	191	162	353
19	209	160	369
Average	171	194	365
P-32 C.P.M. Atherosclerotic / P-32 Normals	2.94	3.42	3.19

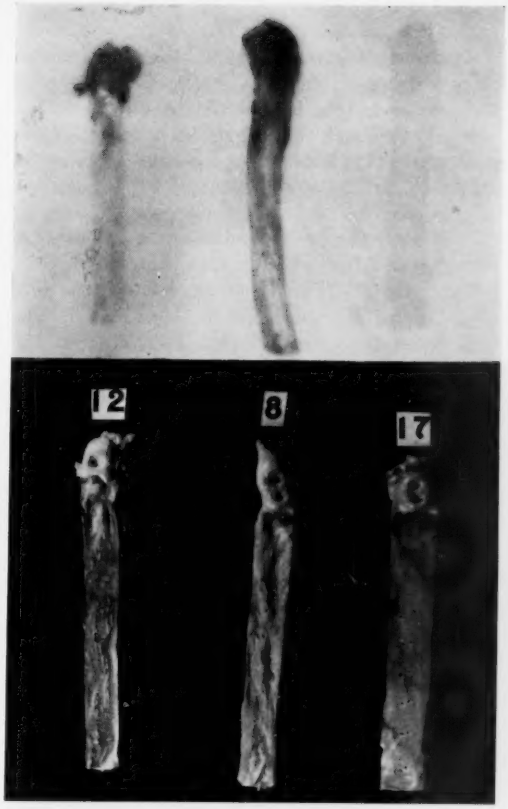

Figure I
Autoradiograms and Photographs of Animal Arteries
8, 12, 17, Number 17 Being a Normal Specimen

Autoradiograms shown in Figure I are typical of those made for each animal. Artery 17 from animal 17 is a normal specimen. The other four arteries of the control group gave similar autoradiograms. There is a perceptible and uniform increase in shadow in the valvular area of the aorta. The remainder of the artery reveals a uniform shadow throughout of lesser density. The photograph below shows an intima free of plaques. Aortas eight and 12 are well plaqued, particularly artery eight. This is reflected in the autoradiogram and demonstrates beyond question that the greatest density of shadow is in the plaqued areas. It is interesting to follow out this density in relation to plaques in the photograph.

Summary

Evidence is given to show that phosphorus plays a definite role in the production of cholesterol induced atherosclerosis in rabbits.

It is demonstrated that both phospholipid phosphorus and residue phosphorus increase in rabbits with cholesterol induced atherosclerosis as compared to controls. Residue phosphorus in this communication is defined as total arterial phosphorus minus phospholipid phosphorus.

By using P^{32} it has been shown that the rate of phospholipid phosphorus increase in the atherosclerotic artery differs widely from the rate of increase of the residue phosphorus. The nature or derivation of this excess residue phosphorus is not known.

It is suggested that arterial phospholipid phosphorus in atherosclerotic aortas results from simple deposition from the blood stream.

Autoradiograms of a normal and two typically abnormal arteries are presented together with photographs of these specimens. It is apparent from a comparison of the autoradiograms and the photographs that the highest concentrations of phosphorus are to be found in plaqued areas.

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Depends on How You Look at It

The use of psychologists by industry in the area of executive selection may prove to be one of industry's most valuable tools in the search for "the right man for the job."

However, while the psychologist can use his talents to evaluate job candidates, management must still retain complete responsibility for the final selection of one executive over another.

The prime danger in using psychologists for aid in a promotion or recruiting task is that management might fall accidentally into the habit of "buck passing" — failing to make the firm decision on a man because it has the psychologist's report to fall back on.

The use of psychology by a number of progressive companies is examined in *Executive Selection: How Psychologists Can Help*, a report published this month by Management Reports in Cambridge, Mass. It is the work of a group of graduate students at the Harvard Business School, who interviewed top executives and industrial psychologists.

It is management's first handbook in the use of psychology as a management tool. The authors have conducted a number of intensive interviews with psychologists who are currently dealing with management problems. To balance this they have interviewed a number of managers who have employed psychologists, particularly in executive selection.

The book follows the process from finding a psychologist, through introducing him to the company, right up to the conclusion reached by the psychologist, how he reports his findings to management and how an executive can weigh the results in the final selection.

The book reveals how many psychological evaluations fall on deaf ears because management did not fully understand the capabilities and limitations of psychologists. And on the other hand, it points out the dangers of a too heavy reliance on psychologists.

There is an evaluation of psychology's contribution to management that touches on such subjects as effect on morale, communication with management and the question of legitimate inquiry versus invasion of privacy. The latter is a facet that has tripped up many otherwise promising starts at psychological evaluation.

The authors come to two basic conclusions. First, no matter how much aid a psychologist might be able to give, the final decision in executive selection must remain in management's hands. Second, by recognizing initially that psychological evaluation techniques are an aid, but not the final answer to executive selection, management can then proceed confident in the knowledge that this science will certainly answer many of the problems involved.

The prime contribution of this book, then, is in providing under one cover, the policies and techniques of both management and psychologists in grappling with the crucial problem of executive selection. For the first time, a common ground is available to both.

* * *

Personality tests threaten every wage-earner, says writer Martin L. Gross in March issue of *True* magazine. If testing boom continues, says Gross, everyone five years hence will need professional tester's approval to get or keep job. Management's gullibility for tests has already been publicized (*IRN*, Nov. 8, 1958). Advises Gross, whose book on testing is due next fall: Don't admit any shortcoming because "your scores are compared with those of a great many liars before you."

—*Industrial Relations News*, February 21, 1959.

Management and Union Health Programs

The Coordination of Care and Public Understanding and Acceptance of Health Services

• LEONA BAUMGARTNER, M.D., Commissioner of Health, and
• MARGARET C. KLEM, Consultant
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A continuation of a bibliography of sources of information on various types of health programs and services and their interrelationships, begun in* Industrial Medicine and Surgery *in December, 1958. These two sections are the last in the series.

IV. Coordination of Services

Newly developed techniques in the health field have greatly increased the cost of medical care and greatly enhanced the need to have health agencies work together to prevent or reduce duplication of services. Today physicians are receiving a considerable share of their income directly or indirectly from voluntary insurance programs or from part-time employment by insurance companies, industry and other organizations. At a recent meeting of the Association of Teachers of Preventive Medicine it was pointed out that the young medical students of today will receive a considerable portion of their income from insurance plans of one kind or another or from retainers or salaries paid by industry. If the vast sums being expended for voluntary health insurance are to be wisely used, closer cooperation between agencies and personnel providing the care becomes imperative.

Perhaps no greater benefit from coordination of service could be achieved than through the breakdown of the suspicion that exists between management and labor in the health field with the resulting coordination of service for occupational and nonoccupational conditions to be provided at the workplace or in the health centers maintained by the employees. There are many community agencies which might serve as the focal point for bringing together management and union personnel so that they could at least become acquainted with each other and learn at first hand of the particular objectives which each desire to have fulfilled through health and medical programs. A coordination of service, except in special situations, cannot be looked for in the near future, but at least a beginning can be made.

Health agencies need to work together not only in planning, but also in action. The barriers to coordination need to be discovered and removed. In discussing the problem of coordination, Doctors Jones and Farner have said: "In order to provide an effective health service for our industrial population, the cooperation and integrated action of many groups is required, since industrial health touches the interests of employer, employee, public health and safety officials, doctor, nurse, educator, engineer, chemist, social worker, insurance representatives and others. Each of these groups has a distinct opportunity and responsibility in this field."[1]

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V. Public Understanding and Acceptance of Health Programs

New health situations are arising because of the conquest of acute infections, the changing composition of the population and the increase in medical knowledge. Chronic diseases and diseases of the aged have become increasingly important public health problems and new services are being developed to cope with them. The public reaction to these changes is slow; without a special effort it may take years before there is an understanding of the goals of a program geared to meet changing community health needs.

The new and complex services needed for the care of the chronic diseases and the rehabilitation of persons disabled by them give rise to new and complex relationships between the persons and agencies providing these services. The public health officer now needs to be an expert in community organization, and he must be skilled in alerting the public to rapidly changing health problems and needs. If he has these skills, he may provide the key to the better coordination of health services and he will be able to guide the development of new ones as the need arises.

In addition, the control of chronic diseases requires active patient participation. Without the patient's cooperation, interest and support, little or nothing can be done to forestall disability or to restore, rehabilitate and prolong his functional and economic independence.

When a new health program is developed, or an old one is changed, information is needed on the extent and accuracy of the public's knowledge of the new services. Techniques for obtaining this type of information are being perfected. Considerable attention is being given to methods which can elicit social perception of health needs and public understanding of available facilities. Recent studies have demonstrated that a certain proportion of the population is not familiar with the health services provided in the community. Some think of the health department, for example, as an organization that does nothing but "give shots"; some wonder whether it is merely a source of care in an emergency; some confuse the services available at the health department with those provided by outpatient departments in the hospital.

Type of Benefit and Insuring Organization	Benefits Paid in 1955	Benefits Paid in 1956
HOSPITAL EXPENSE BENEFITS:	(Millions of dollars)	
Insurance Companies	$ 745	$ 900
Blue Cross-Blue Shield Plans	870	1,010
Independent Plans	75	80
TOTAL	$1,690	$1,990
SURGICAL AND MEDICAL EXPENSE BENEFITS:		
Insurance Companies	$ 445	$ 465
Blue Cross-Blue Shield Plans	330	405
Independent Plans	65	85
TOTAL	$ 840	$ 955
GRAND TOTAL	$2,530	$2,945

The amount being spent under voluntary health insurance is a dramatic indication of the need for (a) understanding of the benefits available under such programs on the part of those eligible for care; (b) the physicians' understanding of the need to order services under such programs judiciously; (c) the elimination of waste and a closer working relationship between these and other health programs; and (d) more attention to the attitudes, desires and needs of those who will be served by the health programs.

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Occupational Health Conference

Inaugurating the second Asian Conference of Occupational Health in Calcutta in November, the State Health Minister stated that occupational health should concern itself not only with the prevention of disease and reduction of industrial hazard, but also with the promotion of educational programs among the workers because physically and mentally alert workers are an asset to any industry.

Illness cannot be divorced from the social environment and mental climate in which a man lives. Occupational health should therefore pay attention to the need for team work in such fields as medicine, psychology and personnel management. The need for this was indicated by the fact that occupational diseases accounted for only 10% of man-days lost in industry while nonindustrial diseases and injuries accounted for 90%. The problem common to all Asian countries is rapid, unplanned urbanization resulting in acute housing shortages. Another problem in Asia is the rapid growth of population. India is one of the few countries which has accepted a policy of family planning. The death rate in most countries has declined on account of improved health conditions but there has been no corresponding fall in the birth rate and this poses a serious problem.

—*J.A.M.A.*, Feb. 7, 1959.

PROFILES in Occupational Health

Emery R. Hayhurst

The session was over; the meeting adjourned. There had been four to speak, less than a dozen to hear them. Last one out, the Doctor was closing the door.

"Leave it open."

"Why should I?" he asked. "Isn't this the end? One shuts the casket on the late deceased."

"Leave it open."

The Doctor looked about him, suddenly realizing that the others had gone. He was alone. The voice was none that he knew.

"Who spoke?"

"I did," the voice replied.

"Who are you?"

"From nadir," the voice went on, "the way is up. Look back in there! Listen! Your place of meeting glows with a spirit that won't be discouraged, echoes with voices that won't be stilled. Don't shut them in. They are the microcosm of great things. Let them out; and watch them . . .

"Watch them, and bide your time, for they will return. And when they do, they won't arrive alone. Your four who came to speak will be fourscore, who will come to instruct; your dozen who came to listen, the legions who will come to learn. Don't shut the door against them! Leave it open! Let it wait their coming . . . ."

"Who are you?" the Doctor asked again.

"I — ," was the answer, "I am Destiny."

The Doctor was thoughtful as he walked away.

Many of the pioneering few whose careers in industrial medicine date back to its beginnings have gone the way of all men. A small number survive; several are regular attendants at important industrial health gatherings. Rarely are they on speakers' lists; mostly they look, and listen. What must be their thoughts as they remember? One of them, at a recent conference where some 1,300 greeted the opening address, recalled a meeting at which he was among the six who comprised the audience. Implicit was the suggestion of near fulfillment as to the prophecy of the long ago; how far was the "1,300" from "the legions" who would come to learn? Implicit also were recollections of the early decades when the need for industrial medicine, represented by no "public crisis, open epidemic, or general plague, was only an attrition of lives so scattered and insidious that no one gave it attention"; when the efforts of the few who saw the need and tried to do something about it seemed futile against the smothering inertia of the times; when the physician who chose to continue such efforts consigned himself to a career of professional loneliness. The memories thus stirred, living again the forgotten days when the studied program and the meager attendance more often than not were the disappointing sequence, might well have embraced the circumstances of the above incident; might even have suggested who the unnamed "Doctor" could have been. For, among the things remembered would be the fine sensitiveness on the part of certain of the leaders that would let them experience such an incident as an act of faith — mere "prologue to the omens coming on."

Although it may be inferred that the "Doctor" was discouraged, it could have been for the moment. For the long range, he and his fellows were the kind whom critics nor indifference could dismay. They sensed the prophecy, and became the apostles of its fulfillment. Slowly, surely, they gave substance, and science, to the

industrial medical entity which, so often since, and by so many, has been enthusiastically "discovered." The history of their period is poorly told in terms of dates and places. It lives, and best is written, in terms of what they did.

But as to most of them, too much of what they did is unremembered. Dimmed by the years, overwhelmed in the flood of the new, too many of their contributions to the progress that now obscures them have been filed with the long-forgotten.

Industrial medicine has experienced a remarkable growth in the last five decades. In many more respects than attendance at meetings the prophecy of its development is burgeoning into fulfillment. Already it may be thought of as a great theater of professional endeavor in which most of the science of medicine is applied to much of the business of living. Its magnitude is measurable; its walls are strong; its pillars straight and tall. It rests on firm foundations, well and truly laid. But it is not a planned structure. It has been an evolution, growing and expanding to meet the needs of time. All this is apparent today. It was not apparent, however, in the early 1900's. Yet that was when the foundations were established. The architects who designed those foundations, the builders who set them on the solid rock — who were they but the pioneers? What prescience had they, to fit so well the future's form and line? For which of them was Destiny the guide? Thus led, what did they do? Remembrance having been aroused, there may be interest in pursuit of the inquiry. Let it begin in Chicago, in 1910.

In that city, in that year, there were three physicians of whom it might be believed that Destiny not only spoke to them but also took them by the hand. They were Alice Hamilton, who was to become, "by general acclaim, America's leading industrial toxicologist"; Harry Mock, who was to be similarly acknowledged for leadership in industrial surgery; and Emery Hayhurst, whose extraordinary abilities as physician, hygienist, author, editor, teacher were to mark him a man ahead of his time.

According to Alice Hamilton's biographer, her instrument of Fate was "an English book, Sir Thomas Oliver's 'Dangerous Trades,' which came into her possession." Soon afterward, in April, 1910, she assumed, for a Commission appointed by the Governor to study the industries of the State, the direction of a survey of the poisonous trades of Illinois. The brilliant career to which this appointment was the key has its own colorful and well merited chapter in the history of industrial medicine.

For Doctor Mock, the "direction-setter" was his opportunity as newly appointed Chief Surgeon at Sears Roebuck. Many of the precedents he established, such, for example, as in respect of physical examinations, are still the rule and guide in employee medical services. This, however, without remembrance of their source. Doctor Mock's distinction as the prime mover in the effort that resulted a few years later in what is now the leading organization of industrial physicians and surgeons likewise has its chapter in the permanent records.

As to Doctor Hayhurst, the "irrevocable Hand" that started him on his course reached out unseen. Just where, or when, it wrought its agency is not set down. No more than this appears: "general practice in Maywood and Chicago, 1910-13; special practice, industrial hygiene, occupational diseases, public health problems." However, in an earlier notation there is the hint of a beginning interest: "with American Can Company, summer vacations, part-time, from factory hand to clerk, timekeeper, and assistant in first aid." But, whatever, and whenever, the genesis of his inspiration, it was in 1910 that he passed his point of no return by undertaking, for the same Commission that had engaged Doctor Hamilton, a survey of the occupational disease situation in Illinois. Thereafter he was committed forever to a career that now, from an eminence that can see it all, looms up without a parallel in industrial medical history.

In 1910 industrial medicine was still in what has been called its "ice age." The "cold shoulder" of medicine was more than cold; it was frozen. The "cold shoulder" of management for the most part was a glacier. To temper the climate, the practitioner in the area of their conjunction had only the warmth of his own devotion. In many ways his was a lonely life. But Emery Hayhurst was accustomed to being lonely. His boyhood years were rural and frontier. From the tiny hamlet of Clapper, Missouri, on the Mississippi near St. Louis, where they lived when he was born, his family moved to a sheep ranch in Montana. A later move, to a timber claim in northern Idaho, saw him his father's "only helper in falling and hewing the pines, firs and cedars for our log cabin."

After graduation from John Marshall High School, in Chicago, he entered the University of Illinois at Urbana (A.B., 1903; A.M., 1905). Then he went on to the University of Illinois College of Medicine (M.D., 1908), and to six months' internship at University Hospital and 18 months as Resident Physician at Cook County Hospital, Chicago. He was Pathologist at University Hospital, 1910-13; Director, Occupational Disease Clinic, Rush Medical College, and Fellow in Occupational Diseases, Sprague Memorial

Institute, University of Chicago, 1911-13. Giving up his general practice in 1913, he went to Columbus, Ohio, as Director of an occupational disease survey for the State Board of Health. His report, covering the two years spent on the project, was published under the title, "A Survey of Industrial Health Hazards and Occupational Diseases in Ohio." This was his first major publication. Leading work of its kind, it has been a model for many. In form, and treatment of subject matter, it is still a classic text. Following this survey, Doctor Hayhurst was Chief, Division of Industrial Hygiene, Ohio State Department of Health, for some years subsequent to 1917, continuing later as Consultant in Occupational Diseases.

Meanwhile, at Ohio State University, he was Assistant Professor of Hygiene and Director of Dispensaries, 1915-20; Professor of Hygiene, and Chairman, Department of Public Health, 1920-31. Concurrently, he earned his Ph.D. (University of Chicago Graduate School, 1916); for the U. S. Army, was Essential Teacher, Ohio State University College of Medicine, 1917-19, and the same at Ohio State University for S.M.A., 1918, and S.A.T.C., 1918-19; for the U. S. Public Health Service, was Special Instructor in Industrial Hygiene, 1919, Surgeon, 1919-24, Consulting Hygienist, 1924-37, Special Consultant for some years following 1942; for the Committee of National Defense, was Secretary of the National Committee on Factory Sanitation, 1917-18; for National Research Council was a member of the Committee on Nutrition in Industry. In identification with the International Congress on Industrial Accidents and Diseases, he was Chairman, for America, of the Section on Industrial Diseases, 1925-38, and U. S. Delegate to the meeting of the Congress in Budapest, 1928. He was Consultant for various official departments, associations, and industries, including Koppers Research Corporation, Pittsburgh, 1927-31. His life membership in American Public Health Association began in 1913. Among the Committees of that organization of which he was Chairman were those on Ventilation and Atmospheric Pollution, Pneumoconiosis, Compensation, Lead Poisoning, Standard Methods of Air Examination. Later he became a member of the Executive Board. In 1915 he was a charter member of the American Association of Industrial Physicians & Surgeons. In Ohio State Medical Association, which he joined in 1913, he was Secretary of the Section on Public Health and Preventive Medicine, 1935, Chairman, 1936-37; in American Medical Association, where his membership dates from 1908, he was on the Committee to Study Air Conditioning, 1937-38; in Columbus Academy of Medicine he was a Council member, Chairman of the Public Health Committee, 1935-36, and for some years in the early forties, a member of the Committee on Industrial Health. His professional memberships include Illinois State Medical Society and Chicago Pathologic Society, 1908-13; American Chemical Society; Ohio Academy of Science; American Association for the Advancement of Science; National Tuberculosis Association; Royal Institute of Public Health and Hygiene (Great Britain). For National Safety Council, he was a member of its Health Advisory Committee. In community affairs, he was President, Columbus Council of Social Agencies, 1930-32.

Thus a few highlights of the years succeeding 1910. A short selection from a long list, but enough to illuminate the characteristics of this man that always he would willingly assume and ably discharge the duties of any position or task wherein he believed his efforts might advance the cause to which he was so deeply devoted, and that always, like Chaucer's Clerk of Oxenford, "gladly wolde he lerne, and gladly teche." But secretarial responsibilities, chairmanships, and classroom commitments, superimposed as they were on the busy consultant practice that filled his days, seemed only to stimulate the expression of another ability in which, among technical writers, he has had few equals, namely, the ability to write. His books, reports, and articles reflect an enviable expertness in the apt use of words, carefully tempered to clear and precise exposition, with thoughtful selection and organization of material, all directed toward letting the facts tell their own story.

The first of his books, as above noted, was his report on the survey of industrial hazards and occupational diseases in Ohio, in 1915. Next was *How to Write an Examination: 40 Pointers.* In 1923 came his volume, *Industrial Health* (Blakiston), in which he was coauthor with George M. Kober. Harry Mock's first book, *Industrial Medicine and Surgery* (Saunders), had been published two years earlier; Alice Hamilton's first, *Industrial Poisons in the United States* (MacMillan), was to appear two years later. This trio quickly became the authoritative nucleus of many a library. In 1927 Doctor Hayhurst added his *Personal Health* (McGraw-Hill).

Throughout these years he was producing also a steady flow of monographs, chapters and sections for year books and standard texts, and articles for medical journals. Typical: his sections on "Occupational Diseases," in Craig's *Diseases of Middle Life* (Davis, 1923); "Intoxications and Physical Agents," in *Practitioners' Library of Medicine and Surgery* (Appleton-Century, 1937); "Occupational Diseases," in Fisher and Emerson's *How to Live* (Funk and Wagnalls, 1938); his chapters on Brass, Copper,

Zinc, Carbon Bisulphide, in Kober and Hanson's *Diseases of Occupation and Vocational Hygiene* (Blakiston, 1913); and on Brass, Copper, Ether, in *Occupation and Health* (International Labour Office, 1930); his 40-page monograph on *Lead Poisoning* (A.P.H.A., 1930). All this together with numerous special reports, such as the Ohio annuals on occupational diseases; coal mines in Illinois and Ohio, 1918; quarries, 1927-29; and more than 200 articles, covering almost the myriad range of matters relevant to the personal and environmental well-being of the worker in industry. Typical again: his articles on occupational brass poisoning (1913); examination of painters for lead poisoning (1914); occupational factors in disease (1915); health insurance (1918); health hazards of nonpoisonous dusts (1920); industrial fatigue (1920); common salt in relation to health (1922); domestic carbon dioxide poisoning (1923); medical inspection of industries (1924); business and health (1924); industrial health and tuberculosis (1925); industrial health under nonmedical supervision (1925); pneumococcus infection and gas combustion products (1928); occupational diseases: definition, causes, prevalence, prevention (1928); silicosis, with low incidence of tuberculosis (1929); lead poisoning (1930); air conditioning (1933); common industrial health hazards (1933); ventilation and atmospheric pollution (1932-36); poisoning by petroleum distillates (1936); occupational diseases of the pharmacist (1939); occupational diseases in chemical industries (1939); industrial health and the defense program (1941); sequelae of plumbism: case reports (1942); occupational disease considerations (1943); nutrition of industrial workers (1945).

Of the articles on subjects in this random sample, two were published in *J.A.M.A.;* three in *Indust. Med. & Surg.;* four in *J. Indust. Hyg.;* five in *A.J.P.H.* Of the several hundred from which this sample is taken, a large proportion appeared in one or another of the "top ten" among medical and scientific journals. Doctor Hayhurst's first article of record, "Survival Respiration," was published in a foreign journal in 1907; his second, "Blood Smears: Preparation and Staining," in *J.A.M.A.* in 1909.

The aggregate of Doctor Hayhurst's writings between 1910 and 1945 crowds its own "five-foot shelf." For those who like averages, it offers proof that, throughout the whole 35 years, this man produced finished contributions to the published literature of industrial medicine and industrial hygiene at the rate of one — whether article, report, book, monograph, section, chapter — about every six weeks. As something done, especially in technical composition, this is a remarkable achievement. As something to do, it would give prolixity pause. Yet nowhere in his contributions is there evidence of haste. Always one senses the unhurried beat, deliberate speed, of scientific exposition, directed by a brilliant, informed, smooth-working mind, at home in the silences of thought. It is a distinguishing feature of this man's writings that they were based predominantly on his own experiences. The later-day techniques of article preparation that depend so much on the library were not available to him. He couldn't start with what others had done. In numerous respects there were no others; and where there were they had done little. Mostly he wrote from conditions and circumstances that were source material — in many instances his own studies and experiments. It follows, naturally, that his "shelf" contains numerous originals, and that his descriptions abound in "firsts" and his studies and reports in conclusions that have proved to be trail-blazers in various areas of investigation. And it also follows that his works became the starting point for his immediate successors in interest and authorship. That point, however, is the starting point toward becoming unremembered. For the writer in a technical field more or less expects to find his work somewhat quickly superseded as developments multiply and articles about them increase. Today's article is listed in tomorrow's references, but usually it is tomorrow's article that is carried forward to the next day's documentation. After a while there is only the name in the index. No doubt that is as it must be. That is as it was with Doctor Hayhurst, and as it has been with many another of the "firsts" in industrial medicine's advancement. But the historian knows that there are certain physicians whose contributions, as pioneers, leaders, investigators, writers, however old in time, are pillars of their science. They stand unbothered by the progress teeming around them, much of it their foster progeny. They are tolerant of the latecoming enthusiasts who fancy they're making a new pillar when they put a little fresh paint on an old one. Certain of Emery Hayhurst's contributions, unmentioned by name, unremembered as to his primacy of content, nevertheless are still withstanding paint over paint over paint.

By no means least among Doctor Hayhurst's contributions to industrial medicine and industrial hygiene has been his helpfulness in various technical editorships. His first such identification was with the *American Journal of Public Health*, where he was Associate Editor, 1917-34, and, for a further period, Advisory Editor in Industrial Hygiene. When the *Journal of Industrial Hygiene* was established in 1919, he started with it as Associate Editor, continuing in that capacity for many years. Again at a beginning, he

was Assistant Editor, from its first issue through its first decade, of *Arch. f. Gewerbepath. u. Gewerbehyg.*, edited by Ludwig Teleky, Vienna, and H. Zangger, Zurich (published by Julius Springer, Berlin). In 1938 he became Associate Editor of *Industrial Medicine and Surgery*. Earlier, 1928-32, he had been Consulting Editor, *Social Science Abstracts*. And in 1925 he had entered upon a period as "Critic" for National Safety Council's *Health Advisory Pamphlets*, and for the publications of various State and Federal departments and agencies relating to industrial hygiene and occupational diseases.

Now in his seventy-ninth spring, Doctor Hayhurst is rounding out his fifth decade in industrial medicine and industrial hygiene. His professional years have witnessed a succession of technological changes more abundant in number and variety and more dazzling in effects on the circumstances of life than can be matched in all of man's history. From the vantage point of the more recent of these changes it is interesting to look back upon them and follow their development from such small beginnings as Marconi's first ship-to-shore wireless and the flights at Kittyhawk to the mighty crescendo of atomic energy and the conquest of space. And from the same vantage point it is equally interesting to look back upon the parallel and corollary development of industrial medicine and industrial hygiene and follow their quick accommodation to the expanding complexities of the new and strange substances, uses, and processes involved in the changes — their steady evolution from "first aid in a cigar box" to the status of full-blown sciences with complexities of their own. The technologies have their great names — mathematicians, inventors, engineers — men who literally lived their work, talked through it, are distinguished by it. Equally the sciences of industrial medicine and industrial hygiene have theirs. And Emery Roe Hayhurst is one of them. He lived his work, has been most articulate in terms of it, and is distinguished because of it.

Like Sir Humphrey Davy's Chemical Philosopher, he pursued his sciences "with true dignity." Against the backdrop of the now current practice, that meant without a press agent. His imagination, vivid and all-beholding in the area of his interests, stopped at its edge. There were many things to be done; they represented variety, originality, importance; but who was doing them? They would be as necessary to the coming sciences of industrial medicine and industrial hygiene as those sciences would be necessary to the coming burgeon of technologies. They would involve much that would be new to medical knowledge; much that would have educational and economic significance. They needed to be done. Quietly, unspectacularly, he set about doing them. He had no faculty for dramatization beyond the drama he lived in the plodding that saw them accomplished; no flair for color other than the bright hues he found in the results he achieved. With almost protean genius he turned from one to another of the long array of subjects he foresaw would belong to the future; this with sure and timely touch, for many of them have grown almost into subspecialties. In the simple faith of the dedicated scientist he believed that excellence would be not only its own reward but also its own best advertisement. He did so much so well that it is difficult to single out any one accomplishment as more important than the rest. Probably as significant as any is the fact that he introduced the first semblance of order and good sense into the general comprehension of occupational diseases. All in all, if — as it long has seemed — Destiny was his preceptor, he was one of its aptest pupils. Could the superlative work of his earlier years have had the publicity that so often is today's attendant of the ordinary, he and his contributions to the sciences that have filled his life would now be legend.

"Thus much" for what he did. What manner of man is he who did it?

It is less difficult to write about this man's work than about the man himself. He was never easy to know, probably because, as an individual apart from his work, he never sought to be known. Yet to know him is a rewarding experience, and to be numbered among his friends is a privilege. He is a modest man, self-contained, self-effacing, somewhat shy, completely free of pretense, entirely devoid of personal ambition. If to the stranger he seems a bit austere, it is only "seems." Behind the reserve there are splendid qualities and unsuspected warmth. To the acquaintance he is an interested listener, to the friend a responsive and appreciative companion. This quality of appreciativeness goes further; let it be woven with sincerity and he will see in the garland of leaves the appeal of roses. The ability to do this is half of being a good editor. And it takes the sting out of the term "critic." Thus it is believed that any tenure he had as a critic was only the opportunity to be constructive. Always he has seemed unaware of his own importance, both as a person and in his professional life. Yet he must have felt, and recognized, his own abilities, his sureness of touch, his vision, his skill; for he worked with certainty, and every man senses when he has done well, especially when his standards are high.

And always he has had a deep respect for the right of every individual to live his own life in his own way. This, and his respect for himself, have kept him aloof from any scramble for position or personal preferment. It is probable that he little realizes his own place in having helped to make certain positions, much coveted as of the present time, worth scrambling for. In a manner serene and enviable he has been content in being himself, simple, modest, unassuming, yet gifted in high degree. This with some measure of happiness, for in the words of Emerson, "that man is happy who, when there is question of success, looks into his work for a reply."

To be favored of Destiny often has its price, sometimes in the testing of the steadfast heart. Emery Hayhurst has had some disappointments that would have floored a lesser man. He was led into one by his belief in people. There is no guile in him, and he was surprised and deeply hurt to encounter it in others. Engaged to direct a medical service for the members of a labor union, he conducted it on the high plane that was his professional habit, and with the whole-souled interest that governed all he did. Discovering that his personal reputation was being exploited and the integrity of his work suborned for purposes of union propaganda, he promptly quit and went home to Columbus. Another disappointment, almost tragic, was the destruction by fire of the irreplaceable industrial medical and hygiene library he had built up with loving care over a long period of years. Hundreds of original documents, priceless as historical data, exist now in memory alone.

There might be the makings of still another disappointment in the fact that both he and his work seem to have been long taken for granted. But that is a penalty of ability. Early identification with excellence means that more of the same is expected. And thus the successive additions to a record of excellence excite no special comment. Only a letdown will draw attention. There could, of course, be a certain monotony in the evenness of superior performance, especially when it goes on and on without at least occasional recognition. But as to honors or awards for Emery Hayhurst, the preference expressed by Cato has particular significance: "I had rather men should ask why my statue is not set up than why it is."

Doctor Hayhurst now rarely goes to industrial medical meetings. Thus there is small chance that he will be prompted by any circumstances of attendance to recall the long-ago sessions when the number present scarcely would form a modern-day committee. But, from the eminence of the reviewing stand, as it were, he can, if he chooses, look back on many things, for it is his to remember a career in industrial medicine and industrial hygiene unparalleled in scope and opportunity. A long career! As he watches the "legions" go by under the warm sun of management's blessing and medicine's acceptance, it is especially his to recall the beginning days when the long procession started, the "ice-age" days when he was its Grand Marshal!

No doubt he knows that as the "legions" enter the tall structure of industrial medicine that rises from the foundations he helped establish and go on to the door that Destiny insisted should be left open, they pass the place where his name, in lasting letters, is carved on the cornerstone. No doubt he knows. But if he doesn't, it is hoped this will tell him. —A.D.C.

Labor and Ten Rules

Industrial physicians must understand aims, desires of organized labor, says Dr. W. E. Parks, chief of occupational health service, Minneapolis Health Dept. "To function smoothly in industry the doctor must know and appreciate the attitudes of labor," Minneapolis physician declares in Hennepin County Medical Society paper. Parks deplores antilabor "suspicions" of some industrial doctors, but backs requesting outside opinion when medical controversies occur. Dr. Parks asserts "If the physician in industry is doing the kind of job he should, he has nothing to fear from consultation with his (colleagues), he should, himself, ask for a consultation before dissatisfaction reaches the state of a union grievance."

Parks says medical records should be kept in medical rather than personnel office. Reason: "Workmen have every right to expect their confidences to be kept . . ." The Minneapolis physician lists 10 rules for the industrial doctor: Direct service toward employee's best interest; provide up-to-date service; treat workers with dignity; avoid being autocratic; respect and follow union contract; insist on working with union-management committee; look frequently into health hazards; be accessible to workers; anticipate complaints; take early action, and be open to suggestions.

—*Industrial Relations News*, February 14, 1959.

Medically Irrelevant

A Case for Diagnosis

In this day of widespread hobby collections of old surgical instruments, a case of fine steel objects came to hand the use of which might baffle the unwary. The photograph reveals all, but lest there be implications of misrepresentation it is admitted that these are not surgical instruments. Your comment as to where these instruments found their use is invited. The answer will be published two issues hence.

This case of instruments was presented by Dr. and Mrs. Norman Maier, the former being Professor of Industrial Psychology at the University of Michigan. These instruments, however, were never for any purposes of torture in any psychological department.

Letters

To the Editor:

. . . . During the period from May 17 to July 7, I was in England, Belgium, France, Germany and Holland, attending two meetings and visiting a considerable number of industrial establishments and research laboratories for the purpose of gaining an impression of what was going on in the fields of industrial medicine, hygiene and safety.

On several occasions during my visit, desire was expressed by research workers and also by persons responsible for occupational health and hygiene to have better literature and personal contacts with the work in their fields of interest that is going on in the United States. I am quite sure that they would like to publish in our journals and to have contributions from the United States to theirs. In my opinion, the creation of acquaintances and exchange of contributions would be very desirable. The language barrier presents some difficulties but can be either accepted or overcome by translation into the appropriate language of the readers in each instance. . . .

—WILLIAM P. YANT

Books

The Practice of Sanitation

by E. S. HOPKINS AND W. H. SCHULZE (Baltimore: Williams & Wilkins Co., 1958)

In the United States of North America the will to live has been eminently successful. The expectancy of life at birth is now rapidly approaching 70 years. Never before has any vast population in the world demonstrated that life expectancy could be more than doubled by conscious effort toward the best uses of human and material resources.

No inconsiderable part of these efforts has been exercised in the field of environmental sanitation. The fruits of these efforts are everywhere manifest in our country by the reductions or the virtual elimination of insect, sewage or rodent borne diseases, such as malaria, typhoid, typhus and the dysenteries. Measures for the protection of drinking water, for the disposal of sewage, for the safeguard of food, etc., have paid enormous dividends.

Perhaps only accident determined that the preventive medical programs of industry should have been termed "industrial hygiene" and not "industrial sanitation." Precisely speaking at least three-fourths of the work of the industrial hygiene engineer falls into the encompassment of sanitation. Terminology has shaped things otherwise, on which account this book is spotty as to industrial preventive medical measures. This publication becomes important to industrial health chiefly because of those chapters unrelated to industrial hygiene or industrial sanitation. Many industrial plants are in themselves community units. In a just sense the industrial medical director becomes the "public health officer" for both plant and community, although

the industrial physician detests that term. For them by their hundreds, this book becomes an asset to be used and cherished.

Industrial Psychology

by THOMAS W. HARRELL (New York: Rinehart and Co., 1958) $6.00

A Casebook in Industrial and Personnel Psychology

by THOMAS W. HARRELL AND JAY T. RUSSMORE (New York: Rinehart and Co., 1958) $1.50
Special combined price of above, when ordered together, is $7.00.

Industrial psychology is the study of people at work in industry and business. It is the study of their aptitudes and their qualifications for jobs. It includes the principles and practices of training in the skills and attitudes for industrial work. Management training is especially important at present. Industrial psychology is concerned with the physical aspects of the work environment as, for instance, lighting and temperature and their effect on work output and safety. It is the study, to a major degree, of the principles and practices of human relations. It is the study of attitudes and motivation that affect high morale and enthusiasm at work and of the causes of monotony that bring about boredom. It is the study of mental health on the job and of ways of helping back to mental health those people who have become upset and confused. It is the study of the relations between the supervisor and his subordinates and of the factors which lead to industrial strife or to cooperation between management and labor. Industrial psychology is a complicated study of a number of things, but it is primarily the study of people — as individuals or in groups — in the work situation.

Industrial psychology provides theory and research methods to personnel management, which is the heart of all management. In this view, industrial psychology is extremely broad. Admittedly, the theories are incompletely proved and the research methods have not yet obtained adequate results with desirably rigorous controls. Nonetheless, the results of the application of psychology to industry and the importance of the problems confronting this discipline explain its tremendous growth.

The concept of motivation is central to the presentation of this book. Psychological methods are being used to select people for jobs in which they can be motivated by their interests and aptitudes to perform effectively. Psychological principles and techniques are being used to train new employees so that they will be motivated to do a good job. The design of new machines is largely an engineering matter, but even here it is becoming accepted that the motivation of employees is important, in that they must be willing to accept a new machine or a new method if their productivity is to be high in the long run. Finally, supervisory practices based on psychological principles are being adopted to motivate the employee on the job.

The second and smaller volume is a casebook suitable for use along with its companion, the major publication.

The industrial physician continually is aware of all manner of mental deviation of functional nature among his patients, the workers. Always he is in need of guidance of a good psychiatrist and the clinical psychologist. Neither of these books is designed to contribute to the industrial physician's foremost need. In fact the words "physician" and "medicine" do not appear in the index. Instead this book is directed to human management engineering, with much of its drive allocated to motivation of the worker rather than to his mental health.

Handbook of Treatment of Acute Poisoning

by E. H. BENSLEY AND G. E. JORON, 2nd ed. (London: E. & S. Livingstone, Ltd., 1958) $4.00
The Williams & Wilkins Co., Baltimore, is exclusive U. S. agent.

The term "toxicology" so distinctly is associated with industry and industrial medicine that it might be assumed that in occupational health work acute poisoning constituted a significant portion of the professional task. But not so. Apart from a few peculiarly vulnerable industries, acute poisoning in industry is less frequent than in general practice and distinctly less frequent than true for the patient population of a general hospital.

This may account for the common omission from most small size textbooks on toxicology of any inclusion, or at least any frequent inclusion, of those agents chiefly identified with industry. Not so in the case of the present publication. Approximately one-half of the entire contents is devoted to industry's harmful agents. It is well recognized that many troublemakers in industries, such as carbon tetrachloride and carbon monoxide, are encountered in accidents in the home as well. This fact does not account for their appearance in this book. Many are directly identified as industrial poisonings and many are unlikely to be encountered in homes at any time.

After everything is considered, this small textbook may be accepted by industrial physicians as possessing better coverage for acute poisoning in industry than any other known publication, page for page.

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VOLUME XXVIII

NUMBER 4

Coal Tar Dyes

As a generality, industrial physicians long have taken the position that the completely fabricated coal tar dyes are relatively harmless to exposed workers. The emphasis as to toxicity consistently has been directed to the raw materials and intermediate stages in production. In support of this attitude industrial physicians have been influenced by the lengthy list of such dyes sponsored by federal agencies as tolerable in foods and by the fact that a fair number of these dyes are utilized in medicine in diagnostic and therapeutic procedure.

Slowly this state of assurance is being disrupted. In 1955 the Federal Health, Education and Welfare Department (HEW) is reported to have found one dye long certified for use in foods to be "highly poisonous." This is Red 32. Foremostly this dye has been utilized in the artificial coloring of Florida oranges. The natural color of these oranges runs to a little appealing light yellow. The desired orange color has been attained through the use of the dye, Red 32. Orders now have been issued banning this dye for this use. The contention of the orange growers has been that, in the quantity employed, a harmful level was not reached. The U. S. Supreme Court lately has made a notable decision. This ruling is to the effect that as to permissive dyes in foods when any one has been adjudged as harmful, no quantity of it, however small, may be considered permissible for use within the provisions of the Food, Drug and Cosmetic Act of 1938.

All the current stir relates to the ingestion of this particular dye. Yet, it may follow that if by ingestion this dye is "highly poisonous," exposure at the place of manufacture may lead to damage through inhalation of the same dye as dust.

It is unhappily true that as investigators in occupational health go about reexaminations of the exposure materials about them, many known to be toxic are proving to be a bit more toxic than heretofore rated. Likewise some substances long cherished as harmless, at least in newer compounds, are being shifted out of the harmless class. Titanium, heralded for its innocence, now is displaying its ugliness in newer industrial forms. Iron, long a prized example of industrial harmlessness, is moving over into the trouble-making group in a few of its compounds. At this moment, of the substances that might be suspected of damaging treachery, elemental silicon is almost the last survivor in utter innocence. Perhaps just ahead will come the disclosure of proof that elemental silicon has joined the ranks of the offenders.

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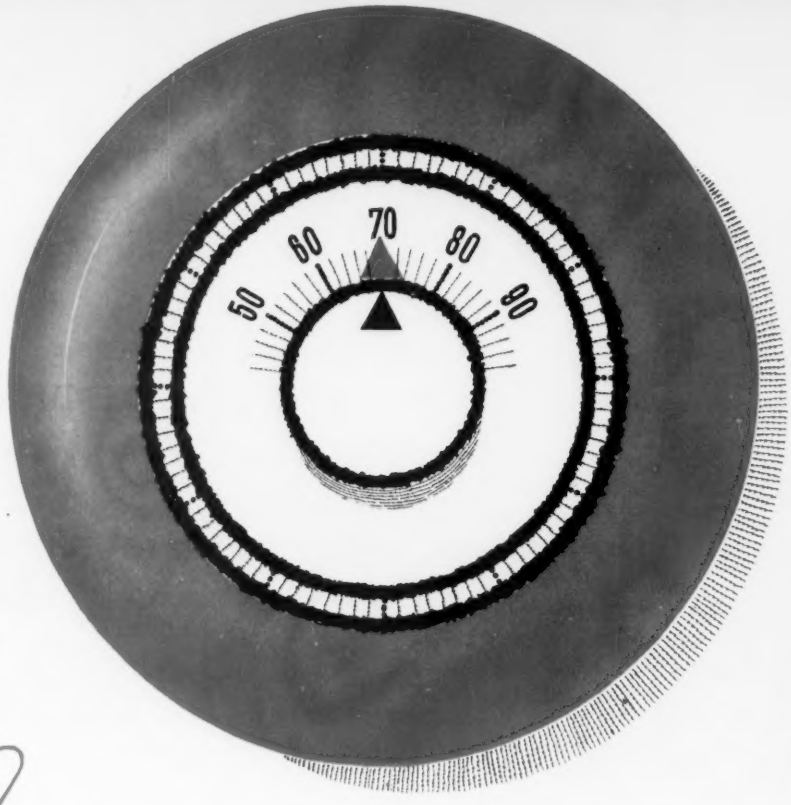

Superior to aspirin in antipyretic action

The hypothalamic nuclei play an indispensable role in regulating the peripheral mechanism concerned with the production of and the loss of body heat. As a result, the hypothalamus has been commonly termed the 'thermostat' of the body[1]. Anacin acts promptly to reset the thermostat back to normal temperature again. In fact, investigation by Brownlee[2] verifies that one of the components in Anacin (acetophenetidin) is superior to aspirin in reducing fever in hyperpyretic patients.

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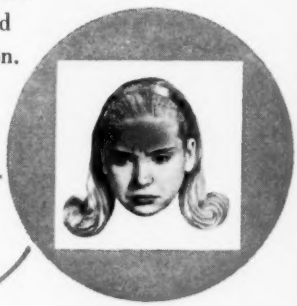

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Reference: 1. Goodman, Louis S. and Gilman, Alfred: *The Pharmacological Basis of Therapeutics*, Sec. Ed., 1955. 2. Brownlee, George: *A Comparison of the Antipyretic Activity and Toxicity of Phenacetin and Aspirin*, Quarterly J. of Pharmacy and Pharmacology, 10:609-620.

COMMENT AND OPINION

Illness and Injury

The American who experienced the nation's average amount of incapacitating illness plus the average time lost recovering from injury was laid up, in the 12 months ended June 30, a total of 20 days. This is the estimate of the U. S. Public Health Service.

The magnitude of the total time involved in aches and ailments on such a scale is brought home by the figure for the nation's aggregate loss — 3.4 billion man days for the year. All this, however, cannot be considered a productive waste. The figure includes absences of children from school and the illnesses of homemakers as well.

It is hardly possible to set a figure for the economic loss to the nation, but since lost time due to strikes is frequently a matter of comment, it is interesting to note last year's total. The Bureau of Labor Statistics has reported that in all of 1957 work stoppages throughout the nation involved 1.4 million workers who lost 16 million days of work.

Illness and injury then cost the U. S. more than 200 times the number of man days lost through labor troubles — quite a margin for medical science to try to cut down.

—From *Endicott* (New York) *Bulletin*, December 1, 1958.

Office Employee Absenteeism

If your company would like to find out how its turnover and absenteeism "batting averages" for office employees stack up with those of other firms, the following first-half-1958 averages, compiled by Commerce & Industry Association of New York, might prove useful yardstick (particularly since there are no regular national surveys in this field). Survey covered 212 firms, employing approximately 100,000 office workers.

Average monthly turnover separation rates for first-half-1958: male, 4.53; female, 4.17. (Formula used makes rate equal to separations or terminations divided by average number of employees on payroll, multiplied by 100.) Average monthly absentee rates for first-half of 1958: male, 3.05; female, 4.32. (Formula used makes rate equal to number of man-days lost through job absence divided by average number of employees times number of work days, multiplied by 100.) Average monthly percentage of employees absent: male, 24.70%; female, 35.71%.

—From *Industrial Relations News*, September 13, 1958.

Pneumoconiosis Control

A group of experts at the International Labor Office, have completed an "International Classification of Persistent Radiological Opacities in the Lung Fields Provoked by the Inhalation of Mineral Dust."

Nurse just tears this new foil suture packet open to give you stronger, more pliable surgical gut. *It's sterilized by electron beam.*

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This represents one aspect of the ILO's battle over several years against pneumoconiosis, a disease which attacks workers liable to breathe excessive dust in the course of their work.

The importance of early diagnosis in achieving prevention was recognized by all the experts and one of the aims of the classification was to facilitate the early diagnosis of the disease before the health of the worker is affected or his future jeopardized.

During their work in the ILO, the experts examined several hundred films, preselected as the most typical, illustrating the qualitative and quantitative features of the radiographic appearances of the pneumoconioses and the different appearances they could have in different industries and according to the nature of the dusts involved.

They decided to establish a set of standard films illustrating the characteristic appearances of the middle stage of each category of pneumoconiosis.

The experts recommended that the ILO should attach to the classification a set of reproductions of standard films and should give the widest possible publicity to this illustrated classification.

The experts would like the Office to follow closely the developments in the pneumoconioses and in particular to achieve an international application of the classification.

Lead Poisoning Reduced

A determined effort to reduce the amount of lead poisoning in Pennsylvania industries has been made by various agencies during the last two years. DR. CHARLES L. WILBAR, JR., Secretary of Health, said that a joint attack on lead poisoning was undertaken by the departments of Health and Labor and Industry, explaining that lead poisoning is caused by the ingestion of lead dust or by the inhalation of lead fumes.

DR. JAN LIEBEN, Director of the Health Department's Division of Occupational Health, which is conducting that department's antilead poisoning campaign, reported that in 1957, 39 cases of lead poisoning came to his division's attention while in 1958 only 12 cases were reported.

As a result of these claims and of routine Health Department inspections, the Occupational Health Division did 29 special lead dust and lead fumes sampling surveys in 1957 and 27 in 1958.

Compliance orders for various violations issued by the Health Department came to 48 in seven plants in 1957 and 27 in eight industrial establishments in 1958. DR. LIEBEN said that in only two instances did the two departments have to bring joint pressure to "clear up bad situations."

"Cases of lead poisoning are preventable." DR. LIEBEN said. "Proper exhaust systems, adequate ventilation, personal cleanliness and 'good housekeeping' will eliminate lead poisoning." Many persons suffering from lead poisoning required hospitalization and all of them lost work time.

—Wilkes-Barre (Pa.) *Sunday-Independent*, January 25, 1959.

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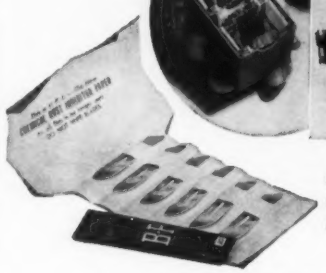

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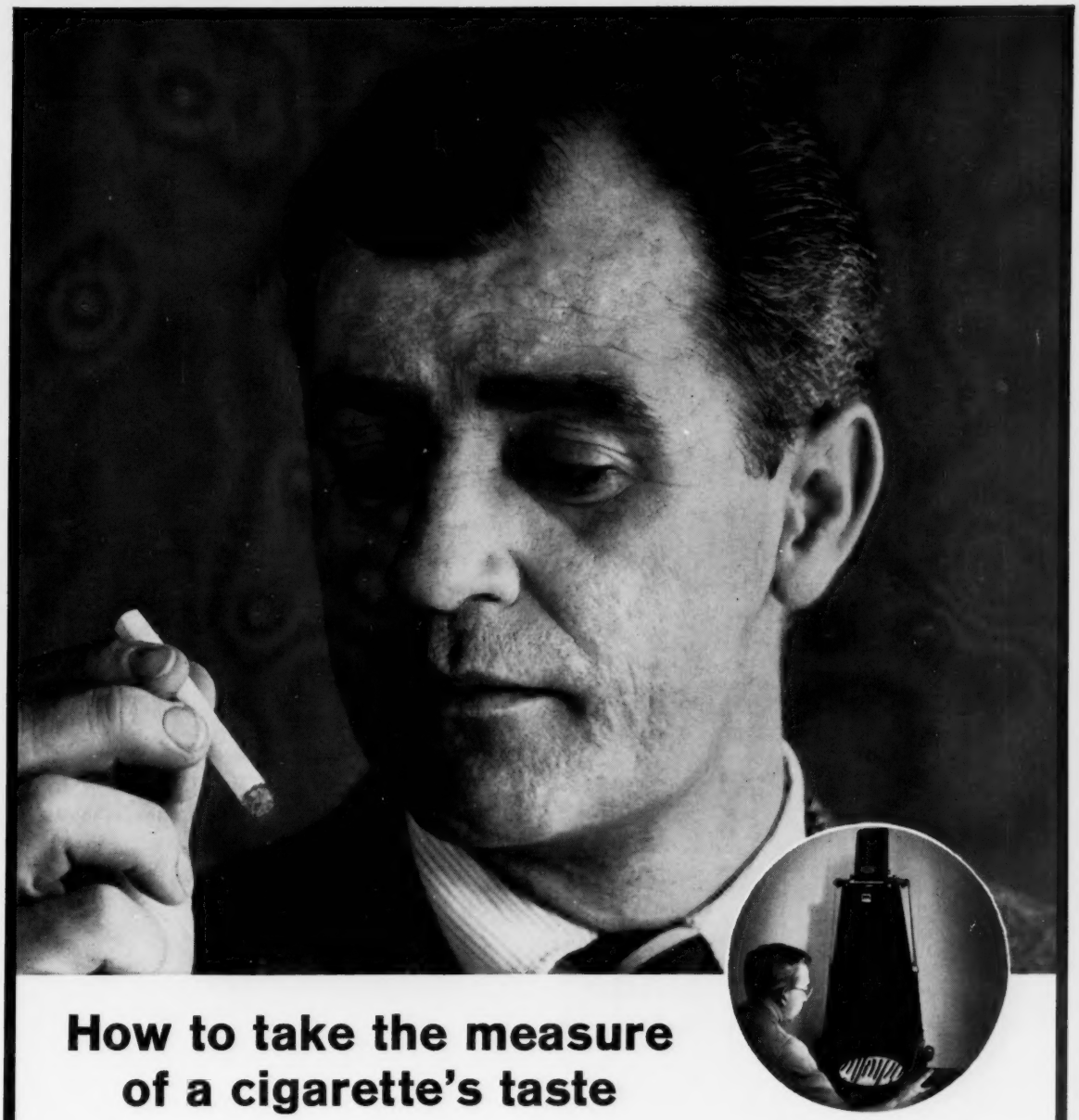

How to take the measure of a cigarette's taste

One good way is to measure the tobacco in the cigarette. Oddly enough, the *width* of the tobacco strands affects the cigarette's taste. Tobacco that's too wide (or too narrow) would pack improperly. The cigarette's burning rate would be adversely affected . . . and so would its taste.

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Welsh, A. L. and Ede, M.: J. A. M. A. 166:158, 1958.

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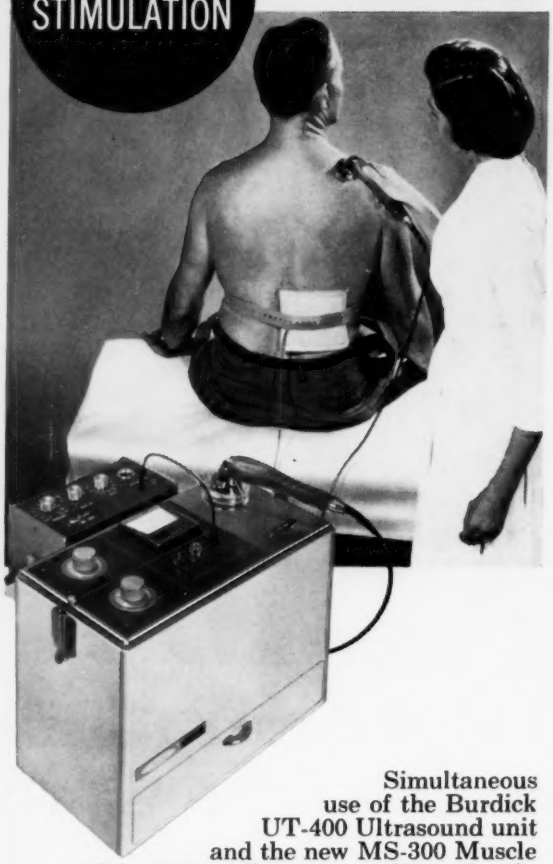

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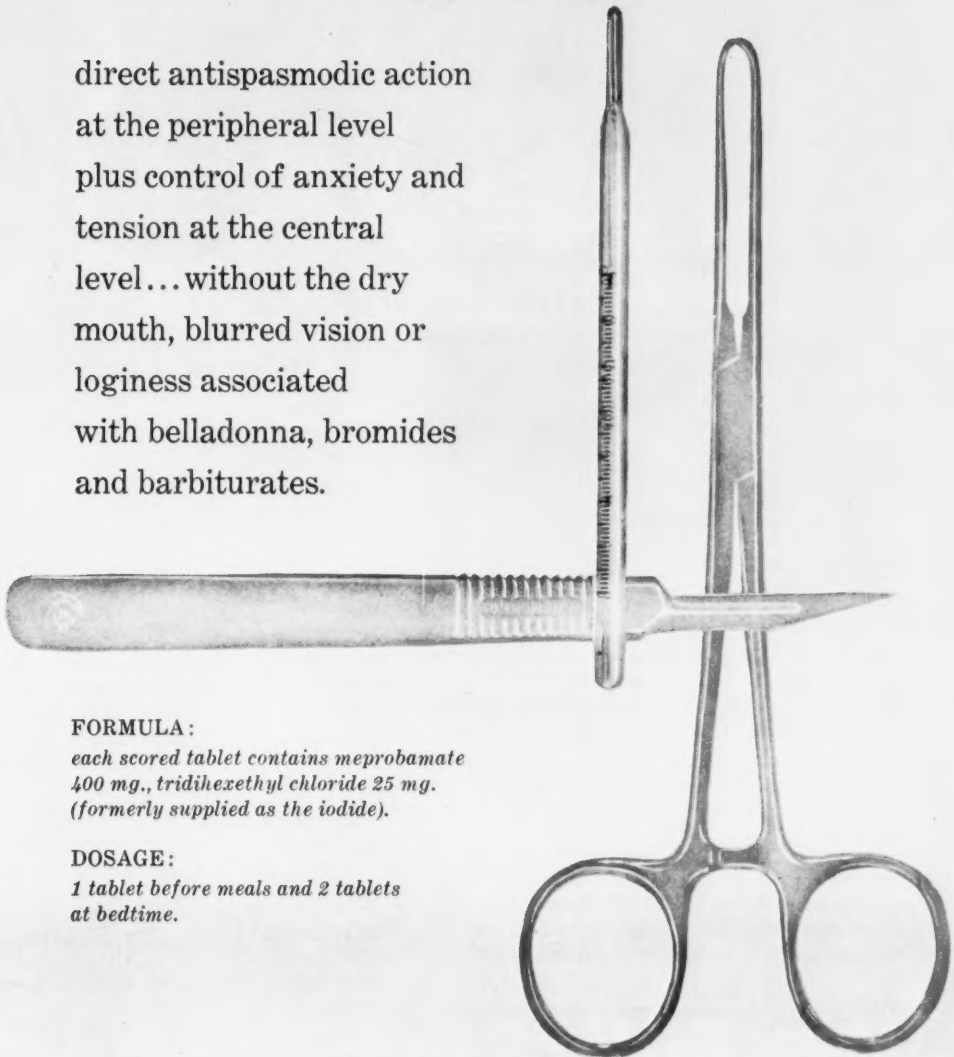

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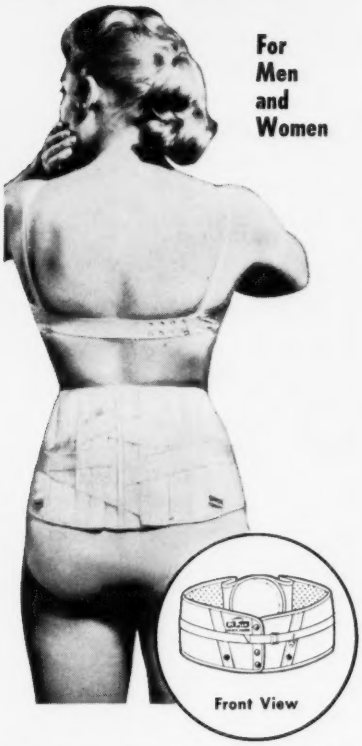

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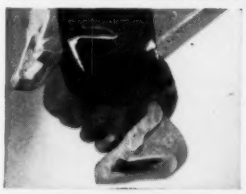

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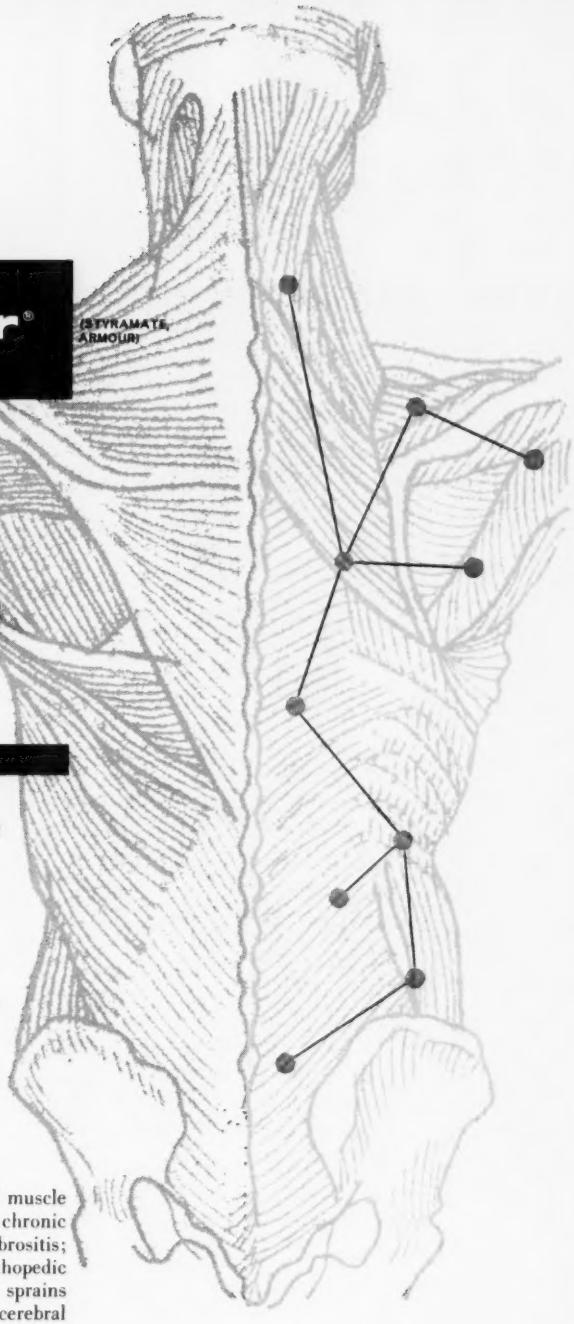

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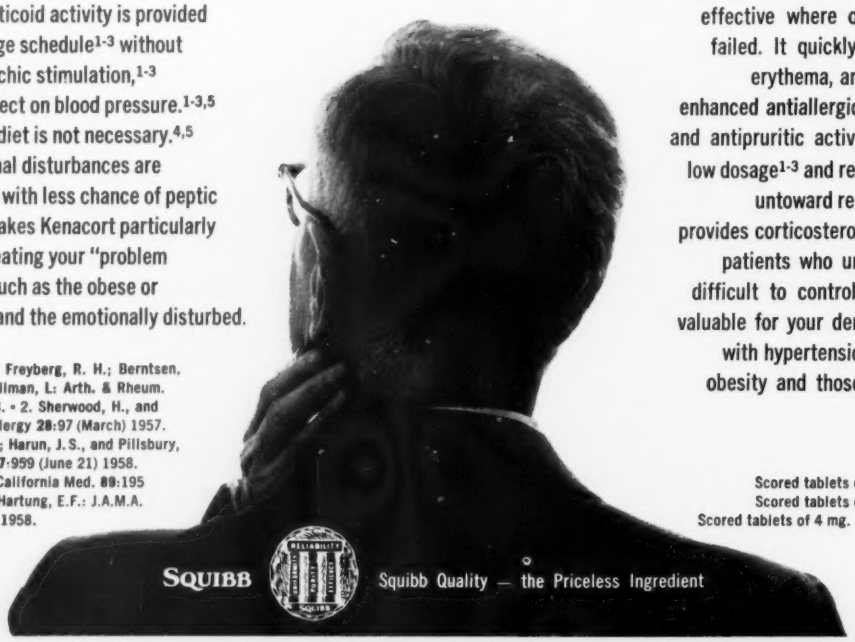

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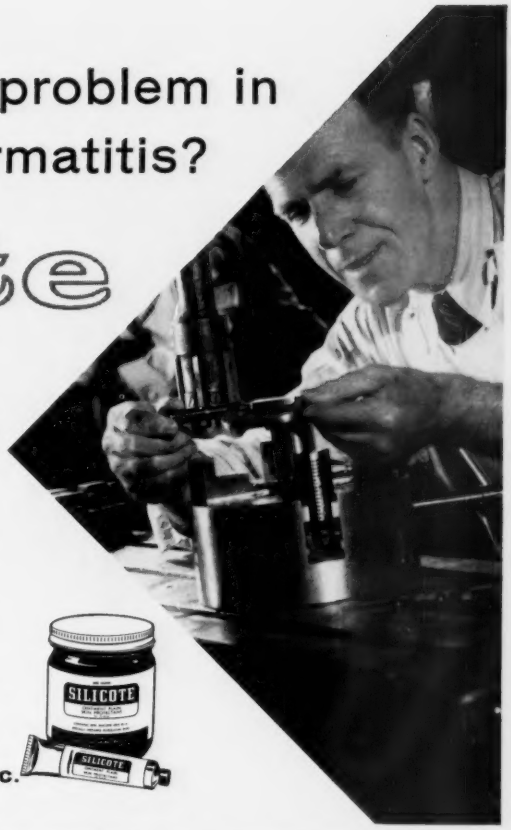

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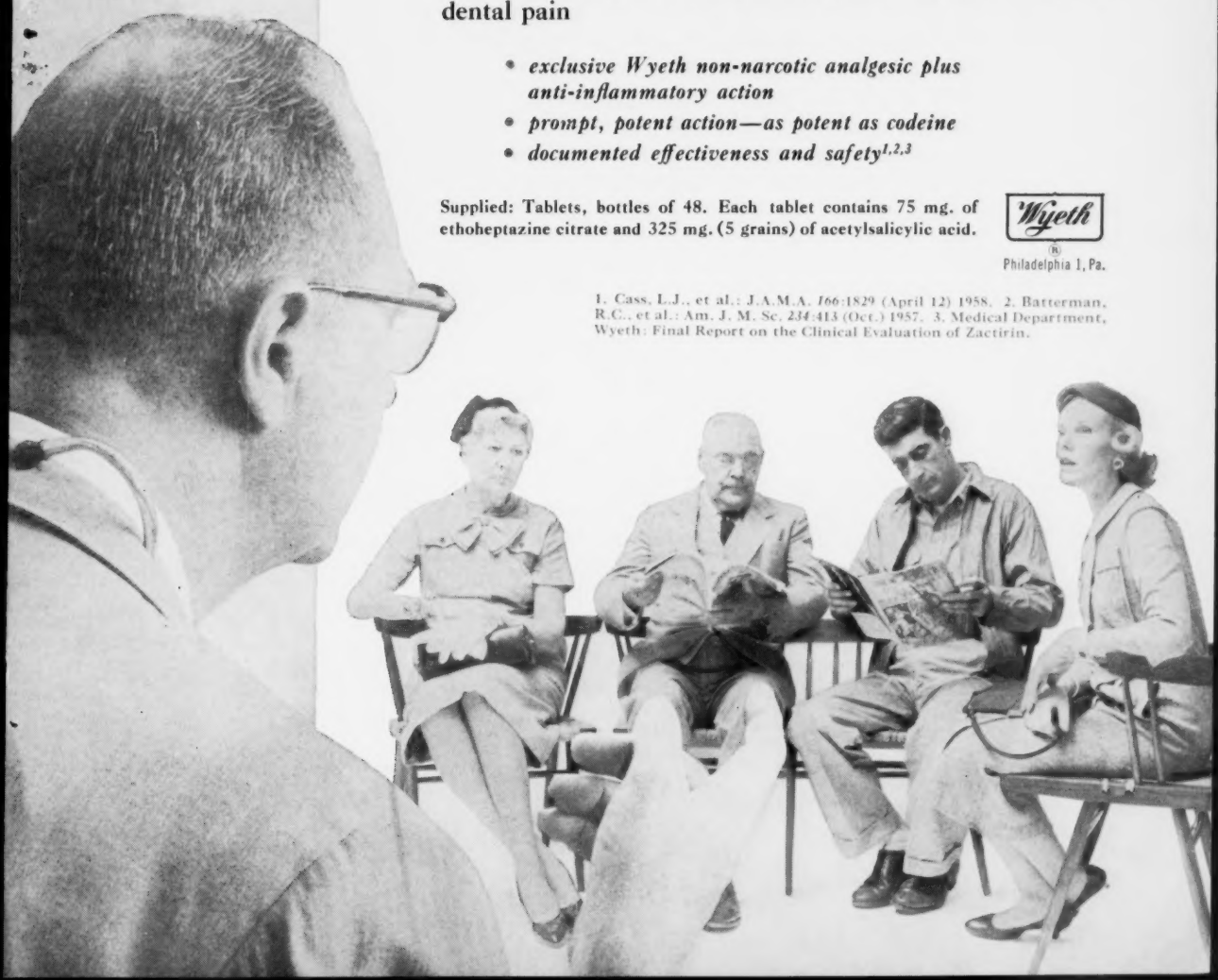
1. Cass, L.J., et al.: J.A.M.A. *166*:1829 (April 12) 1958. 2. Batterman, R.C., et al.: Am. J. M. Sc. *234*:413 (Oct.) 1957. 3. Medical Department, Wyeth: Final Report on the Clinical Evaluation of Zactirin.



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